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ABSTRACT

The Buffalo School Health Demonstration Plan is an innovative model program designed to expand and improve the delivery of health services and health education to school-age children attending Buffalo (New York) schools, with emphasis on lower socioeconomic youth. It seeks to develop a primarily preventive program that attempts to modify attitudes and health practices of students for long range benefit and to determine health status of students, arrange for remediation of problems, and assure appropriate response to injury and sudden illness. Essential features of the project structure are: (1) a collaborative, multi-agency approach to the provision of services and (2) functional and reciprocal links with community-based health care providers. Four interdependent components comprise an effective school health program: (1) school health education, (2) school health services, (3) parental education and support, and (4) community support services. This report begins with a description of each of these four project components and of the evaluation methodology. It then provides evaluation findings from 1980-1984. Appendices provide a glossary of terms, sample logs and forms, and materials used to evaluate health attitudes and knowledge. (KHW)

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BUFFALO SCHOOL HEALTH DEMONSTRATION PROJECT

1983-1984

FINAL REPORT

prepared for

Erie County BOCES
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prepared by

The Westchester Institute for Human Services Research, Inc.
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Project is made available
through special legislation
introduced by New York State
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HIGHLIGHTS

°The Buffalo School Health Demonstration Project has continued to demonstrate its ability to provide high quality preventive and remedial health and health-related care to school age children. In addition, health service staff's solicitation of parental involvement and utilization of community support services have proven effective in the delivery of school-based health care.

°For the period September 1980 to present, health services staff have made over 75,000 individual contacts with students. These contacts have led to the delivery of nearly 100,000 direct health and health-related services, including:

a) over 31,000 screenings and physical examinations
b) over 24,000 initial health assessments
c) over 10,000 treatment services, such as first aid
d) over 2,500 referrals to health care providers
e) over 6,500 counseling and education services

°During the 1983-1984 school year, health service staff made approximately 16,000 contacts with students in the three elementary and two secondary schools participating in the demonstration. The number of contacts made exhibited a steady increase by month from September through March, with the exception of a small decrease from December to February. The most active month for student contact was March, with the fewest number of contacts being recorded in September.

°Screenings and physical examinations accounted for more than one-fourth of the more than 24,000 health services delivered by project staff during the 1983-84 school year. Most of the screenings performed included height and weight checks, assessments of visual acuity, and routine physical examinations. The second and third most frequently delivered health services were information gathering/ initial assessment and treatment, respectively. These three health service categories together accounted for approximately two-thirds of all health services delivered in 1983-1984.

°Analysis of the project's comprehensive referral mechanism revealed that nearly 800 referrals to primary health care providers were made from September 1983-June 1984. Eye disorders and musculoskeletal disorders were the most frequent causes of referral, together accounting for

almost half of all referrals made during the year. Referral rates by academic level were approximately equal for elementary and secondary student populations. Overall, one in twenty contacts made in participating schools necessitated referral (an increase of 67% over the previous project year); with approximately one out of five referrals being accorded priority status.

°Fairly high immunization compliance rates were recorded in all five participating schools for the 1983-84 project year. This principal activity of the health services staff achieved an overall compliance of 95% for the more than 3,500 students enrolled across academic levels. This is consistent with the high levels reported for previous project years.

°Two separate assessment instruments—a health attitude survey and a cognitive health knowledge test—were constructed to evaluate the project's health education component. The instruments were administered to both treatment and control groups during the 1983-1984 school year. The results of the testing established the significant positive impact of the health education component on both student knowledge and attitude.

°A student problem checklist also was constructed to access the combined impact of the health services and health education components of the project. Administration of the checklist during the project year, demonstrated a significant reduction in reported health and health-related problems in students participating in the Buffalo School Health Demonstration Project.

°The interpretation and dissemination of recently acquired testing information provides a new and powerful vehicle for program implementation. Major efforts have been made during the 1983-84 project year to utilize assessment technology for program improvement. The availability of this supplementary information to project administrators is expected to demonstrate a favorable impact on both the health services and educational components of the project.

I. INTRODUCTION

The Buffalo School Health Demonstration Project (BSHDP) represents an innovative school health and health education delivery model designed and implemented by an organizational collaborative. This collaborative was composed of state, regional and local educational agencies, a county health department, a community health service center, and a community health task force. Special funds in support of this demonstration project were obtained from the New York State Legislature through the efforts of Assemblyman and Deputy Speaker Arthur O. Eve. This final report describes the structure and activities of the BSHDP for the 1983-84 school year. Presented in this chapter is a brief description of the project's background, including a discussion of the major participating agencies. This section is followed by an overview of project design, goals and the purposes of the evaluation, which has been conducted since the project's inception. An outline of the present report concludes this chapter.

A. PROJECT CONCEPTION AND ORGANIZATION

The BSHDP was conceived in April 1979, when select members of the school health planning task force of the Erie County Health Department and community representatives, in collaboration with Assemblyman Arthur O. Eve, convened to discuss the development of a school health demonstration project. The conceptualized purpose of the project was to alleviate existing deficiencies in the school health programs of a subset of Buffalo public and diocesan schools. At that meeting, a project steering committee was formed to assume responsibility for both the administration of the project and the achievement of project objectives. This committee represented a consortium of agencies, including a) the Erie County Health Department, b) the Buffalo Public School Administration, c) the Buffalo Diocesan School Administration, d) the Erie Board of Cooperative

Educational Services (BOCES), e) the New York State Education Department, f) the State University of Buffalo, g) the Geneva Scruggs Community Health Care Center, and h) the Urban Task Force (representing Arthur O. Eve). The stated purpose of the steering committee was to assist the major participating agencies and the project director in translating project goals into viable services.

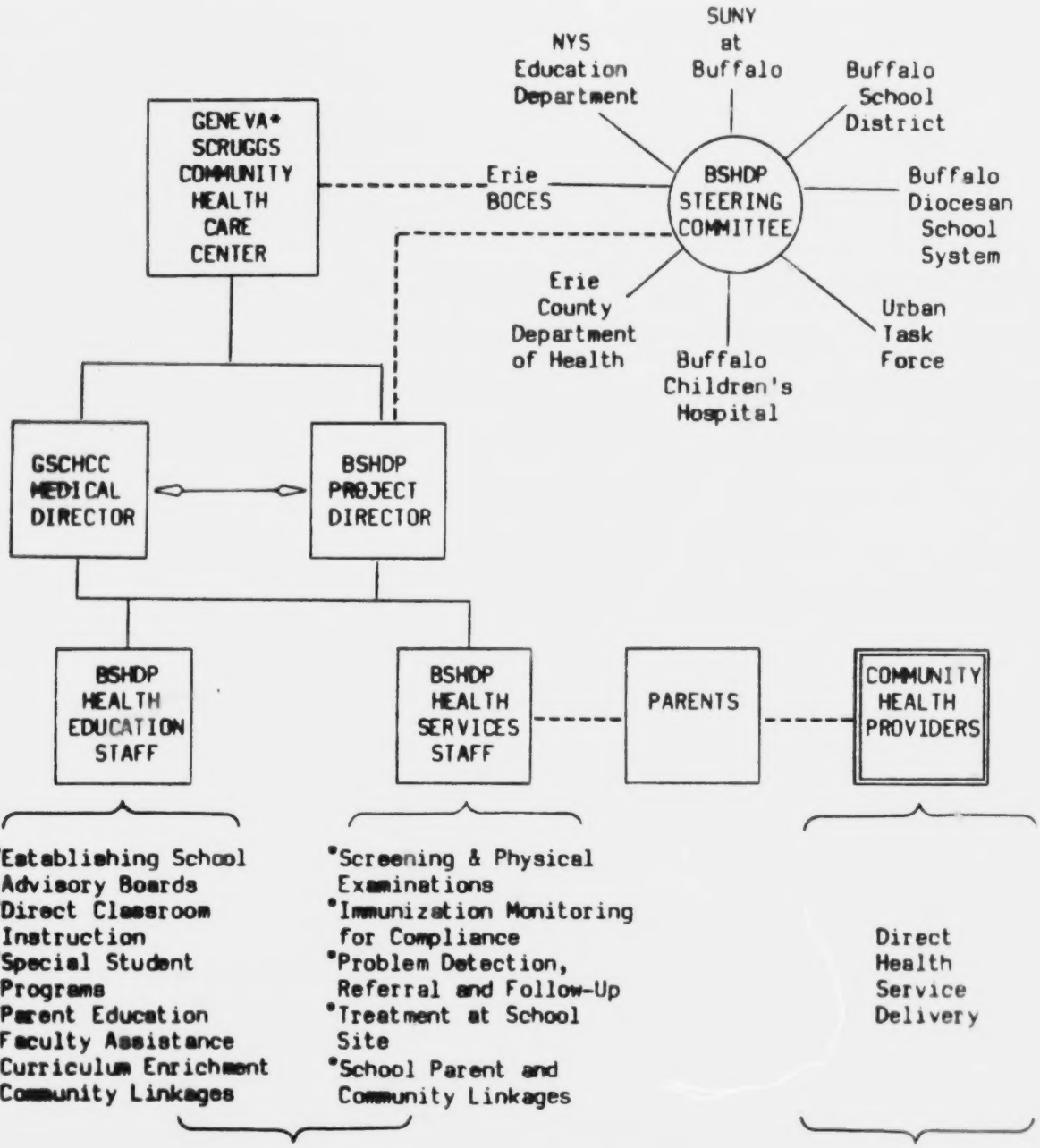
The coordinated network of the steering committee, project staff, administrators, health education staff, health service staff, and various constituent groups is depicted figuratively in the organizational chart presented on the following page. This organizational structure was developed specifically for the demonstration project to maintain the collaborative relationships among participating agencies and to provide the project with a functional managerial framework. While it is not the intent of this report to review the project's organizational structure, a brief description of the roles assumed by various agencies and staff in the development and implementation of the BSHDP is presented to clarify organizational participation.

Erie #1 BOCES

This agency holds the responsibility for the project's fiscal administration and accountability, and has subcontracted with the Geneva Scruggs Community Health Care Center to provide professional health service staff to the project. The BOCES has subcontracted also with the Westchester Institute for Human Services Research, Inc. to provide an ongoing evaluation of project processes and outcomes. Continuous evaluative feedback was sought to facilitate project implementation and in-process decision making. Finally, Erie BOCES provides its educational and administrative expertise via its committee representation.

BUFFALO SCHOOL HEALTH DEMONSTRATION PROJECT

ORGANIZATIONAL CHART



IMPROVING AND EXPANDING HEALTH CARE SERVICES FOR PILOT SCHOOLS
Elementary Schools: Futures Academy, School #53 and School #68 High Schools: Kensington and Bishop Turner

*Geneva Scruggs Community Health Care Center, which holds membership on the Steering Committee, functions also as a primary community health provider for the project.

Erie County Health Department and Buffalo Board of Education

The professional assistance and full cooperation of these two agencies was a prerequisite to successful implementation of the BSHDP. Both agencies played a major leadership role in the development of the project. Currently, they are working cooperatively to integrate all project and school staff in order to aid continued project development.

State University of Buffalo

Initially, SUNY at Buffalo was actively involved in the conceptualization of the BSHDP. Currently, university representatives serve as advisors to the project.

New York State Education Department

This agency's representative provides consulting services to project staff, monitors project activity, and participates in monthly meetings.

Urban Task Force

The BSHDP was originally funded through special legislation introduced by Assemblyman Arthur O. Eve, who is represented by the Urban Task Force on the steering committee. The Task Force provided essential political support for the project during the early stages of development, and has continued its support throughout project implementation.

Geneva Scruggs Community Health Care Center (GSCHCC)

The GSCHCC is a primary health care provider furnishing a full range of medical, dental, and mental health services to the BSHDP. Medical services provided by the GSCHCC include a) preventive and medical treatment for infants, children, and adults, b) obstetric and gynecological care, c) blood pressure counseling, d) vision and hearing screenings, and e) lung function testing. Among the variety of dental services provided are X-rays, fillings, bridgework, teeth cleaning, extractions, and root canal. The GSCHCC is also equipped to

provide diagnostic evaluations and treatment to those with behavioral-emotional difficulties. In addition, the center's community health workers provide valuable assistance to clientele in the resolution of daily problems in areas such as housing, public assistance, Social Security, and senior citizen support services.

Project Director

Responsibility for the daily conduct of the BSHDP resides with the Project Director. Her function is to coordinate the health education and health service components of the project, as well as ancillary support services to the families of students. She thus maintains functional relationships with the GSCHCC and other community-based service organizations utilized by the project. The Project Director screens prospective staff, supervises project personnel, and monitors project implementation and outcomes. The Project Director also functions as a principal liaison between the BSHDP and the external evaluator. In this capacity, she is responsible for the dissemination of evaluative information to project staff and administrators and, therefore, is fundamentally involved in the continual development of the demonstration project.

B. PROJECT DESIGN, GOALS, AND PURPOSES OF EVALUATION

The BSHDP was designed to expand and improve the delivery of health services and health education to school-age children attending Buffalo schools, with emphasis on lower socioeconomic youth who comprise a large proportion of the high-risk and under-serviced urban population. The project's collaborative, multi-agency approach to the provision of these services and its functional and reciprocal links with community-based health care providers represent essential features of the project structure. This demonstration

recognizes and emphasizes, in its design, the interdependence of four basic components necessary for an effective school health program: 1) school health education, 2) school health services, 3) parental education and support, and 4) community support services.

In addition to implementation of the project components described above, the BSHDP seeks to achieve the following goals:

1. To develop an integrated health education/health services program that is primarily preventive in nature and that attempts to modify, in a constructive fashion, the attitudes and health practices of students for their long range benefit.

2. To determine the health status of students, to arrange for the remediation of problems, and to assure an appropriate response to injury and sudden illness.

The BSHDP remains committed to achieving these goals in a manner that preserves the flexibility and adaptability necessary for the project to remain responsive to the changing needs of student populations. Toward this end, the Westchester Institute for Human Services Research, Inc. was contracted to design and implement a continuous evaluation of the project. The three major purposes of the evaluation were:

1. To provide the Steering Committee, the Project Director and project staff with ongoing, formative feedback on project operations to facilitate project improvement through in-process decision making.

2. To provide a comprehensive record of project accomplishments, problems, constraints, and solutions which can serve as a model for other communities interested in developing similar inter-agency approaches to the provision of health care and health education services for school-age populations.

3. To gather and document summative assessment data as a means of substantiating the effectiveness of the BSHDP which can be used at the county, state, and national levels for future policy-making in the areas of health service planning, dissemination and funding.

The preceding discussion introduced the unique, multi-faceted approach to health care utilized by the BSHDP, including a brief review of the four project components and objectives of the evaluation. The first section of the following chapter provides a detailed description of the project components, along with a review of the staffing pattern utilized for the delivery of health services. The second section delineates the specific methodologies employed in the evaluation. Chapter III presents the health service evaluation findings for the most recent project period, September 1983 to June 1984, as well as the results of cumulative analyses of data collected from September 1980 to the present. The evaluation results for the health education component are reported in Chapter IV. A four-year project summary, presented in Chapter V, concludes this report.

II. DESCRIPTION OF PROJECT COMPONENTS AND EVALUATION METHODOLOGY

Introduced in the previous chapter was the necessary interdependence of the four basic service components of the BSHDP: 1) health services, 2) health education, 3) parental education and support, and 4) community support services. Section A of this chapter provides a description of the purpose and role of each of these components, including the staffing patterns utilized in the delivery of health services. Section B addresses the structure and function of the documentation and data collection strategies that comprise the BSHDP's evaluation methodology.

A. PROJECT COMPONENTS

1. Health Services

Activities

This principal component of the demonstration was designed to broaden the range and depth of traditional school health services and to emphasize the importance of prevention and the maintenance of good health. The function of this component within the BSHDP is best evidenced by the major activities in which project staff engage. A detailed discussion of these activities is presented below:

On-site treatment is provided by a staff of health professionals, whose presence at school sites assures an appropriate response to injury and sudden illness. Among the types of treatment from which students benefit are first aid and management of chronic illness. Other health and health-related services performed by staff are a) counseling and education, b) initial health assessments and medical history taking, c) monitoring of previously identified illness or injury, and d) referral to a primary health care provider.

Screening and physical examination are provided on both a routine and as-needed basis to students throughout the school year. The variety of screenings performed by health service staff include a) vision, b) scoliosis, c) color perception, d) height and weight, e) blood pressure, f) urinalysis, and g) immunization compliance review. Physical examinations, performed by nurse practitioners, are given to all incoming students, as well as to students whose current health condition indicates a need for assessment. In addition, students seeking participation in sports activities and those referred to the Committee on the Handicapped receive physicals. Hearing and dental screenings are performed in the elementary schools primarily by County Health Department staff.

Problem detection, referral, and follow-up constitutes one of the most salient features of the BSHDP. These activities include a) the identification of health problems through screenings and "walk-in" contacts, b) referral to an appropriate health care provider, and c) follow-up to ensure that the health problem is being resolved. Each referral is given either priority or non-priority status and the underlying health problem is categorized in accordance with the coding system adapted from the International Classification of Diseases (ICD) system. Frequent contacts of health service staff with parents, teachers, physicians, and community agencies serve to complement these primary referral activities.

School, parent, and community linkages are accomplished through conferences with parents, faculty, and administrators focused on student health needs and the planning and implementation of action strategies for the resolution of

health and health-related problems. A variety of community service organizations are involved in this effort, including the GSCHCC, the Buffalo Council of Alcoholism, and the Roswell Park Cancer Research Center.

Documentation of all health service activities is implemented through extensive record keeping. Complete problem-oriented medical records[1] are maintained for all students treated by BSHDP staff. Moreover, project staff maintain a detailed account of all student contacts, including the nature of the contact (walk-in or staff initiated) and the purpose of the contact (screening or referral follow-up). These accounts are recorded in the form of daily activity logs, providing the extensive documentation necessary for a thorough evaluation of the project.

Staffing

One of the more novel features of the BSHDP resides in its delivery of full-time health care to student populations via the collaborative efforts of nurse practitioners, registered nurses, and health assistants. As described in the 1982 Interim Report, incorporating nurse practitioners into the more traditional school staffing pattern significantly augments both the quality and the range of health care provided to school-age children.[2] Such benefits derived by employing nurse practitioner services are primarily due to the fact that these health professionals, vis-a-vis other school health staff, are trained and legally permitted to assume greater initiative in student health care, as well as to accept greater responsibility for their acts.[3]

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1 Developed by the New York State Education Department for use in School Health Demonstration programs.

2 D. S. Salkever, E. A. Skinner, D. M. Steinwachs, and H. Katz. Episode-based efficiency comparisons for physicians and nurse practitioners. Medical Care, February, 1982, Vol. XX(2).

3 A Joint Statement of the American Nurses' Association and the American School Health Association. The Journal of School Health, November, 1973, Vol. XLIII(9).

The use of all three types of health care providers (i.e., nurse practitioners, registered nurses, and health assistants) within a single health service delivery system may be considered by some as an unnecessary school expense. However, it appears to be the optimal staffing pattern for the delivery of school-based health care. In a separate case study assessment conducted by the evaluator during the 1982-83 year (see Delineation of Health Service Staff Roles: A Case Study Analysis), 70 distinct health services were identified as being performed by staff. Examination of the nature of these services revealed an association with various decision making skills that require differential levels of training and judgment. Therefore, the nurse practitioner (NP), the registered nurse (RN), and the health assistant (HA) each plays a specific role in student health care. When their expertise is used efficiently, a powerful health service team capable of providing quality preventive and remedial health care is effected.

The need for this type of health coverage becomes apparent when one examines the health care resources of various student populations. Specifically, a variety of factors exist in many inner-city and rural communities which prevent children from receiving adequate health care. Such factors include inaccessibility of facilities, insufficiently trained professionals, and inappropriate use of available health care resources by parents.[4] As a result, in many communities the schools represent the only readily available source of health care.

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4 Susan D. Sobolewski. Cost-effective school nurse practitioner services. The Journal of School Health, November, 1981.

The burgeoning poverty statistics also indicate a need for full school-based health service teams. According to the January 1983 bulletin prepared by the New York State Council on Children and Families, nearly one in every five children in this state was living below poverty levels in 1980, as compared with approximately one in every eight children in 1970. In 1980, 16% of all families with children were living below poverty level, representing a 6% increase from the previous decade. Given these conditions, the school appears to be a uniquely suited setting for the provision of health services.[5]

As the above discussion illustrates, meeting the health care needs of students ranks among the most difficult challenges facing our school system. The BSHDP has met this challenge particularly well through its employment of a full complement of upper- and lower-level health professionals. Last year, a comparison was made between the staffing structure of the BSHDP and that utilized by the New York State School Health Demonstration Project (State SHDP). As illustrated in Table 1, the staffing pattern utilized by the BSHDP is distinctive from that utilized by various sites within the State SHDP.[6] State SHDP sites showed a greater utilization of lower-level health professionals, i.e., health assistants. More significantly, however, are the comparative student-health service staff ratios reported in Table 2. For the health service team as a whole, the BSHDP showed a ratio of 465 students per health staff member, rivaled only by the ratio for Harlem Hospital. Further analysis, however, reveals much greater disparity when the ratios are calculated for only upper-level health staff, i.e., nurse practitioners, registered

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5 C. DeAngelis, B. Berman, D. Oda, and R. Meeker. Comparative values of school physical examinations and mass screening tests. Journal of Pediatrics, 102, 1983.

6 New York State Department of Health, Bureau of Maternal and Child Health. Second Quarter Report for New York State School Health Demonstration Project, September 13-November 30, 1982.

nurses, and physician assistants. As reported in the second row of the table, the lowest student upper-level health staff ratio was obtained for the BSHDP, with 744 students per upper-level health professional. In the eight state health projects, the ratios are considerably higher, averaging almost 1700 students per upper-level health staff member. It may be concluded that the BSHDP is especially well equipped to meet both the frequency and range of health care demands from its student population.

Table 1

COMPARISON OF HEALTH SERVICE STAFF EMPLOYED BY THE BSHDP AND BY THE NEW YORK STATE SHDP DURING THE 1982-83 YEAR

Health Staff†	BSHDP E* = 3,450	Bronx Lebanon Hospital E* = 4,750	Hunts Point Center E* = 3,000	Harlem Hospital E* = 4,150	Jamaica Hospital E* = 3,600	Lutheran Medical Center E* = 5,000	LBJ Health Center E* = 4,000	Boriken Health Center E* = 3,500	A. L. Jordan Center E* = 2,600
NP	2	5	-	1	1	-	2	1	1
RN	3	-	-	-	1	-	-	-	-
PA	-	-	1	2	1	3	2	1	-
HA	3	4	1	7	5	4	4	5	2
TOTAL	8	9	2	10	8	7	8	7	3

*E=Enrollment

†Staff: NP=nurse practitioner, RN=registered nurse, PA=physician assistant, HA=health assistant

Table 2

STUDENT-HEALTH SERVICE STAFF RATIOS FOR THE BSHDP AND FOR THE NEW YORK STATE SHDP OBSERVED DURING THE 1982-83 YEAR

School Health Project	Number of Students Per Health Staff Member	Number of Students Per Upper Level Health Staff Member
BSHDP (1983-84)	465	744
New York State SHDP:		
Bronx-Lebanon Hospital	528	950
Hunts Point Center	1500	3000
Harlem Hospital	415	1383
Jamaica Hospital	450	1200
Lutheran Medical Center	714	1667
LBJ Health Center	500	1000
Boriken Health Center	500	1750
A. L. Jordan Center	867	2600

2. Health Education

One of the major objectives of the BSHDP was to develop a classroom health education curriculum that would encourage student participation in their own program of health maintenance. The resulting 13-week instructional program contained activities and materials constructed specifically to meet the health education objective of the BSHDP. Primarily preventive in nature, the curriculum was developed for elementary grade levels and was comprised of two major components: 1) cognitive and 2) attitudinal. The cognitive component of the curriculum was designed to increase student knowledge and understanding of health and health-related concepts, while the attitudinal curriculum component endeavored to improve student attitudes and motivation toward the development of healthful behavior and lifestyles. Most significant, however, was the emphasis of both components on the increasing psychosocial problems of urban students, such as alcohol and drug abuse. Thus, the BSHDP's health education

program was structured to address the health and health-related needs of students via an integrated approach responsive to the increasingly complex challenges of the urban environment.

3. Parental Education and Support

A particularly notable characteristic of the BSHDP is its recognition of the potential influence parents can exert in the attainment of project goals. To effectively meet the health care needs of students, it was critical to gain family support and participation in the preventive and therapeutic health regimens that students were encouraged to develop. Thus, project staff sought new and effective methods of involving parents in the health and health-related care of their children. One of the most valuable modes of parent contact utilized by project staff is the home visit. Home visits are made to provide parental counseling and education to assure compliance with prescribed treatment plans. Due to the limited availability of staff time for this activity, home visiting is generally restricted to emergency cases in which staff intervention is crucial to the well-being of the child. When deemed necessary, the occurrence of home visiting usually results in dramatic benefits to the child.

This school-home linkage has been widely recognized as an essential component of effective school health programs. Specifically, the linkage permits staff to provide continuity between the health attitudes and behaviors reinforced at school with those in the home. Furthermore, home visits assure that timely and appropriate attention is directed to the students' health and health-related difficulties and that sufficient action is taken towards their resolution.

4. Community Support Services

In order to augment the capability of in-school personnel, it was necessary for students and their families to have easy access and appropriate direction to a broad range of community-based services. The BSHDP has established formal linkages with a variety of service organizations, assuring not only the availability of necessary services, but also jointly developed service plans, service outcome reviews, and a mechanism for regular, systematic follow-up. This multi-agency network provides the mechanism through which representatives of sources of education and medical care can participate jointly in the identification and resolution of student health problems.

B. EVALUATION METHODOLOGY

Various methodologies specifically designed for the evaluation of the BSHDP are described in detail in the sections that follow. It will be noted that the evaluation design incorporates both the health service and health education components of the project; the parental education/support and the community support service components are fundamental features of the former two components and, therefore, have not been evaluated independently.

1. Health Service Component

The BSHDP staff initiated service delivery in the Spring of 1980, and began full-scale documentation of project activities in January 1981. Throughout the project's existence, data collection forms tailored specifically to meet the project's evaluation needs were designed and periodically revised by the independent evaluator. For example, in September of the past project year, the International Classification of Diseases (ICD) codes were incorporated, in adapted form, into project activity recording forms for the categorization of

health problem types encountered in student populations. Utilization of this internationally recognized system of health problem classification permitted the collection of data in standard form, facilitating comparison with other school health demonstration projects. Another major revision allowed health service staff to classify referrals according to priority/non-priority status.[7] This change not only enhanced the analysis of the project's comprehensive referral mechanism, but aided the staff's record keeping activities and strategies for the systematic follow-up of referrals.

The data collection forms currently used by health service staff (included in Appendix B) are described below:

1) Student Contact Log - used to record all student-staff encounters of a relatively episodic nature. That is, all contacts that are not planned screenings or physicals are documented in detail in this log (hereafter referred to as walk-in contacts). The characteristics of contacts that are recorded include: a) the date of contact, b) student's name, grade, and homeroom number, c) suspected problem type (ICD code), d) services rendered, e) disposition of the contact, and f) type of staff member handling the case (e.g., nurse practitioner, health assistant, etc.). The student contact log constitutes the single most extensive documentation strategy for project processes and outcomes.

2) Screening Log - provides for the aggregate documentation of basic screening information, including a) type and number of screenings performed, b) date, grade and room number, c) initial versus recheck screening classification, and d) the number of resulting referrals. Physical examinations and immunization compliance reviews also are recorded in the screening log.

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7 A priority referral is defined as a referral which results in personal contact with the parents in the form of a telephone call or home visit within 24 hours of student contact or screening for the purpose of informing the parents of the child's health problem. Priority referrals are those which require the immediate attention of the child's primary health care provider, with lack of medical care, in the opinion of health service staff, likely resulting in pain or discomfort, short or long term disability, or contagious exposure to others (e.g., otitis media (acute), lice, conjunctivitis).

3) Referral Log - permits staff to trace, on an individual basis, the process and outcome of referrals, from the initial arrangement of an appointment with a health care provider through resolution of the health problem necessitating the referral. Recorded in this log are the a) source of the referral (i.e., student contact versus screening), b) referral type (i.e., priority versus non-priority), c) suspected problem type, d) provider information, e) date and method of follow-up attempts, f) final diagnosis, and g) disposition (outcome).

4) Referral Log Update Form - provides a systematic approach for project staff to record accurate and updated information on the outcomes of BSHDP referrals on a monthly basis. Part 1 of the Update Form allows for documentation of the total number of referrals made each month as well as their current status. An "open" referral status indicates that the case has not achieved resolution and that project staff are actively engaged in follow-up. A referral listed as "non-compliance" indicates the parent or guardian's overt refusal to cooperate in seeking health care for the child. Finally, a referral may be given "closed" status when one of the following four conditions has been evidenced:

   a) condition has returned to normal as indicated by BSHDP staff recheck;

   b) formal treatment begins or condition is under authoritative observation;

   c) no problem was detected by authoritative referral source;

   d) authoritative source indicates problem is resolved.

   It can be seen that this classification of referral status provides ready reference to both staff and the evaluator for analysis of the frequency and outcome of referrals.

   Parts 2 and 3 of the form were designed to be completed in the same manner as Part 1. Part 2 provides for the documentation of the number of BSHDP health assessments that were confirmed or revised, while Part 3 is used to record various provider information.

5) Provider Receiving Referral Form - used to gather updated information on student health problems and the providers who actually served them. The form is produced in triplicate: the original copy is forwarded to the parent and ultimately to the medical specialist who treats the child; the second copy remains on file in the school health office to facilitate follow-up; the third copy is sent to the GSCHCC. The health provider records complete assessment information on

the form, including a) diagnosis, b) type of treatment, c) date of next appointment, and d) recommended modifications of the child's school schedule (e.g., suspension of physical education activity for two weeks). The form is then returned to the parent or mailed directly to the school health office.

6) Staff Time Log - used by health service staff to record, to the nearest one-quarter hour, the amount of time spent on a wide range of activities. Types of activities listed in the log include a) health service delivery categories, b) record keeping and logging, c) organization and planning, d) staff meetings, and e) conferences, meetings, or discussions with parents, teachers, and school administrators. Each log provides for a monthly documentation of daily activities. The staff time log thus permits systematic and extensive analysis of project process and serves to identify trends produced by seasonal fluctuations.

In addition to the data recording forms and logs described above, a complete set of monthly summary forms are provided to staff for the purpose of communicating activity data to the evaluator and the project director. There are four monthly summary forms, one corresponding to each of the four activity logs (i.e., student contact, screening, referral, and staff time). Utilization of these data summaries began in September of 1982 to eliminate the need for transferring the voluminous logs which result from the extensive range of services provided by the BSHDP.

During the 1982-83 year, a separate evaluation study was conducted to identify BSHDP staffing patterns. An instrument was constructed by the evaluator for use by health service staff to describe the roles they actually assume as well as the roles they regard as optimal when working with various health service professionals. Staff members delineated these roles for each of 70 distinct health and health-related services. For a complete description of

the methodology and results of the study, the reader is directed to the evaluator's report entitled: Delineation of Health Service Staff Roles: A Case Study Analysis.

2. Health Education Component

Each academic year, BSHDP's health educator selects fourth and sixth grade classes to participate in the classroom health education program. In order to assess the effectiveness of the curriculum and its impact on students, two separate paper and pencil measures were constructed by the evaluator in collaboration with the health educator. The Buffalo School Health Attitude Survey was designed specifically to assess fourth and sixth grade students' attitudes toward various health related practices, behaviors, and lifestyles. It was expected that students' attitudes would change in a positive direction following exposure to the health education program. Similarly, it was thought that student knowledge of the health and health-related concepts developed in the curriculum would increase significantly. In order to assess this expected outcome, a cognitive Health Knowledge Test was constructed for use on the sixth grade level. Fourth grade student knowledge of curriculum content was not evaluated due to the curriculum's behavioral, rather than cognitive, orientation.

During the 1983-84 year, student treatment and control groups were tested with the above assessment instruments.[8] Treatment groups consisted of students in the grades targeted to receive the health education program. However, due to the project's intent to integrate health education and direct health services into one comprehensive and mutually reinforcing delivery

[8] Copies of the Buffalo School Health Attitude Survey and the Health Knowledge Test are contained in Appendix C.

system, students in grades not exposed to the curriculum received health education counseling from health service staff and reinforcement of health education concepts by classroom teachers. Therefore, the control group was comprised of students from a neighboring school not participating in the demonstration project. The results of the health education testing are presented in Chapter IV.

III. HEALTH SERVICE COMPONENT EVALUATION RESULTS

The BSHDP continues to provide high quality health services as well as a classroom-based health education program for both elementary and secondary school populations. Having just completed its fourth year of operation in three elementary schools (Futures Academy, School #53 and School #68) and two secondary schools (Kensington and Bishop Turner) BSHDP's organization network and innovative utilization of project personnel has resulted in the service of over 3700 students during the past year. Student representation by academic was 59% elementary - 41% secondary.

Findings reported in this chapter are organized by specific features of the health services rendered. The chapter begins (Section A) with a description of staffing patterns utilized by project personnel during the 1983-84 academic year. Section B reports the frequency of contact occurring between health service staff and students based on data obtained from Student Contact and Screening Logs.

In Section C, the total services to date and an expanded analysis of contact is presented. The information was obtained from the Student Contact Log (Part C, Project Services) and supplemented with the number of screenings and referrals recorded in the Screening Log. The number and type of screenings performed are analyzed by academic level in Section D. This section also documents the need for routine screening via case study descriptions. Immunization compliance reviews also are recorded in the Screening Log, and Section E discusses the percentage of students by school in compliance with State immunization mandate. Section F reviews the BSHDP's comprehensive referral mechanism. Among referral findings presented are total numbers of referrals

made by school, types of health problems requiring referral, and the numbers of contacts and screenings resulting in referral. All referral data were obtained from the project's Referral Logs.

Several of the results sections that follow present cumulative findings from September 1980 to date, followed by detailed findings of the most recent project period—September 1983 to June 1984 following. Unless otherwise indicated, tables and figures present data collected for this ten-month period.

A. STAFFING PATTERN

Health service staffing patterns utilized by the five participating schools during the 1983-84 project year is illustrated in Table 3. High rates of staff turnover have characterized the BSHDP since its initial inception, primarily due to the project's annual funding cycle. The past project year witnessed several major staff changes including:

1) The hiring of a new project director;

2) The hiring of a new health educator;

3) The hiring of a nurse practitioner who began her employment in November and resigned in June;

4) The project nurse who had been assigned to school #68 did not begin employment until April;

5) The project nurse currently serving all five institutions did not begin employment until January 4;

6) The health assistant assigned to School #53 was out for two months (November-December) due to illness.

Table 3

BSHDP HEALTH SERVICE STAFFING PATTERN, 1983-84
(Full-Time Equivalents)

Staff Member	Total	School #53	School #68	Futures Academy	Bishop Turner	Kensington
Nurse Practitioner	2.0	.6			.4	1
Registered Nurse	3.0	.6	.4	.6	.4	1
Health Assistant	3.0	1	.6	1.4	-	
Physician Consultant	ON AN AS-NEEDED BASIS					
Psychologist/ Counselor	1.0 (non-health staff)			1		
TOTAL (health staff)	8.0					

As a result of staffing difficulties, health service staff members adapted work schedules to compensate for the lack of adequate health service coverage. Consequently, overall service delivery was affected, rendering a meaningful analysis of staff time by health service activity difficult. In the following sections, however, evaluation data indicate an overall continuity in the provision of high-quality health and health-related care.

Table 4 displays the percentage of time spent by health services staff on a variety of health and health-related activities. The analysis reflects proportional allocations of time by school and by health service staff member.

As can be seen from the results presented in Table 4, on the average 49% of total staff time is spent in the delivery of health services and on the average 27% of staff time is on record keeping and logging activities. Record keeping accounts for more than half of total staff time not being utilized in the delivery of health services.

Table 4

TOTAL NUMBER OF HEALTH SERVICE STAFF TIME HOURS BY ACTIVITY FROM SEPTEMBER-JUNE 1983-1984

Activity	School 53		School 68		Futures Academy		Kensington		Bishop Turner
	NP	HA	RN	HA	RN	HA	NP	RN	NP
Health Service Delivery Responding to Illness-Injury	22%	29%	33%	28%	39%	42%	27%	24%	12%
Counseling/Education	3%	9%	6%	*	6%	1%	11%	7%	3%
Immunization	2%	2%	*	3%	2%	3%	*	*	2%
Referral and Follow-Up	11%	2%	2%	6%	1%	*	5%	*	10%
Physical Examination	4%	*	2%	*	*	2%	7%	*	10%
Screening	12%	7%	9%	7%	6%	5%	7%	3%	5%
TOTAL DELIVERY OF HEALTH SERVICES	54%	49%	52%	45%	54%	53%	57%	34%	42%
Conferences/Meetings/Discussions with Parents	4%	2%	3%	3%	7%	5%	3%	5%	2%
Conferences/Meetings with Teachers/ Administrators	4%	2%	5%	2%	7%	3%	2%	8%	4%
Organization/Planning/Staff Meetings	16%	16%	9%	13%	7%	7%	7%	14%	16%
Record Keeping/Logging	16%	29%	28%	34%	23%	30%	23%	36%	31%
Other	6%	2%	3%	3%	2%	2%	8%	3%	5%

*Less than 1%

NP = Nurse Practitioner
HA = Health Assistant
RN = Registered Nurse

B. STUDENT-STAFF CONTACT PATTERNS

A walk-in student contact is defined as a student-staff encounter made for purposes other than screening or physical examination. These contacts are recorded in the Student Contact Log, while screenings, physicals, and immunization compliance reviews are entered in the Screening Logs. However, the student contact data presented below represent totals for all student-staff encounters, including screenings and physical examinations.

Since documentation of project activities began in September of 1980, health service staff, to date, have engaged in over 75,000 health-related contacts with students. Almost 16,000 contacts were made during the 1983-84 year. The number and percent of student contacts by school during this period are displayed by month in Table 5. As the school totals indicate, 74% of student contacts were made in the three elementary schools.

Total monthly figures for the five schools combined indicate that March was the most active month for health service staff; with the smallest number of contacts being recorded in September. Student contacts generally increased by month from September through March, with the exception of a small decrease during the period of December through February. Subsequent monthly periods showed a general decrease, with June generating about 8% of yearly contacts.

Figure 1, which follows, graphically presents monthly trends in student contact in the five participating schools.

Table 5

NUMBER AND PERCENT OF TOTAL STUDENT CONTACTS MADE PER MONTH IN EACH OF THE FIVE PARTICIPATING SCHOOLS for Period September - June 1983-1984

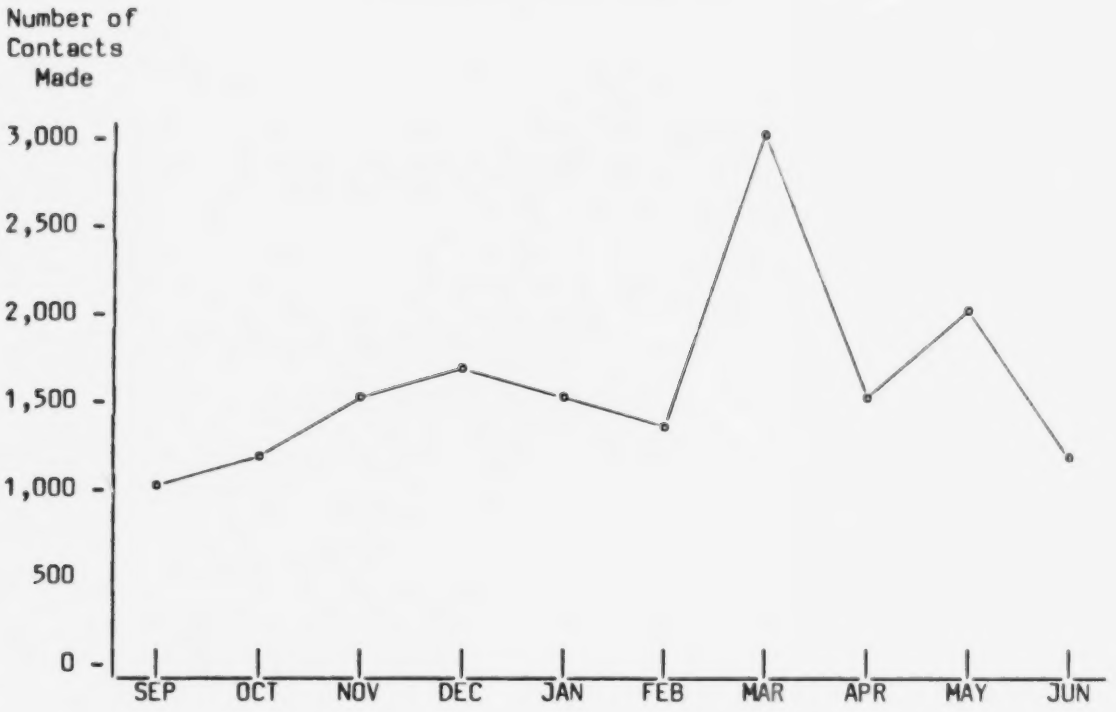
Month	School #53 E*=883		School #68 E*=312		Futures Academy E*=857		Total Elementary Schools E*=2052		Bishop Turner E*=537		Kensington E*=1132		Total Secondary Schools E*=1669		Total E*=3721	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
September	278	6%	55	2%	365	7%	698	6%	55	6%	246	8%	301	7%	999	6%
October	233	5%	79	4%	283	6%	595	5%	134	13%	357	12%	491	12%	1086	7%
November	560	12%	75	4%	442	9%	1077	9%	74	7%	272	9%	346	9%	1423	9%
December	536	11%	204	10%	550	11%	1290	11%	12	1%	256	8%	268	6%	1558	10%
January	376	8%	136	7%	487	10%	999	8%	50	5%	443	15%	493	12%	1492	9%
February	344	7%	262	13%	404	8%	1010	9%	91	9%	315	10%	406	10%	1416	9%
March	1046	21%	545	28%	798	16%	2389	20%	102	10%	578	19%	680	17%	3069	19%
April	486	10%	177	9%	264	5%	927	8%	429	44%	161	5%	590	15%	1517	10%
May	596	12%	270	14%	878	18%	1744	15%	44	4%	311	10%	355	9%	2099	13%
June	412	8%	173	9%	492	10%	1077	9%	8	1%	113	4%	121	3%	1198	8%
TOTAL	4867	100%	1976	100%	4963	100%	11806	100%	999	100%	3052	100%	4051	100%	15857	100%

*E=Enrollment

SOURCE: Contact and Screening Logs

Figure 1

STUDENT CONTACTS PER MONTH IN THE FIVE PARTICIPATING SCHOOLS
SEPTEMBER 1983 - JUNE 1984



As shown in Table 6, by school, Futures Academy ranked first with 4,963 contacts followed by School #53 with 4,867. Bishop Turner ranked last among participating schools with 999 contacts. Of greater significance, as an indicator of service delivery, is an analysis of contacts per student.

Table 6

CONTACTS PER STUDENT IN EACH OF THE FIVE PARTICIPATING SCHOOLS
FOR PERIOD SEPTEMBER 1983 - JUNE 1984

School	Contacts	Enrollment	Contact Per Student
School #53	4,867	883	5.5
School #68	1,976	312	6.3
Futures Academy	4,963	857	5.8
Total Elementary	11,806	2,052	5.75
Bishop Turner	999	537	1.9
Kensington	3,052	1,132	2.7
Total Secondary	4,051	1,669	2.42
TOTAL	15,857	3,721	4.49

School #68, with 6.3 contacts per student, demonstrated the most prolific health delivery system of the participating institutions with Bishop Turner ranking last in this category with 1.9 contacts per student. This data represents averages and is enclosed to provide the reader with a clearer picture of services rendered. The classification of contacts by initiating method indicated that 9,268 or 58% of all contacts were walk-ins, with the remaining 42% being initiated by screening procedures.

C. HEALTH SERVICES RENDERED

BSHDP staff provide a variety of health and health-related services to student populations, ranging from on-site treatment and counseling, to referral to primary health care providers. During the past four years of project operation, BSHDP staff delivered more than 97,000 direct health services, including a) over 24,000 initial health assessments, b) over 10,000 treatment services, and c) over 6,600 counseling/education services. Table 7 displays the number and percent of various services rendered to elementary and secondary school students during the 1983-84 year. As indicated by the data, 74% of all health services were delivered to elementary school students. This represents

a 14% increase in the number of health services rendered at the elementary level over the previous school year. With 59% of total program enrollment at the elementary level, the disproportionate delivery of elementary services represents 2.88 services at the elementary level for every service rendered at the secondary school level.

Table 7

NUMBER AND PERCENT OF HEALTH SERVICES PROVIDED

Type of Health Service	Elementary Schools Enrollment: 1980		Secondary Schools Enrollment: 1470		TOTAL	
	N	%	N	%	N	%
Screenings and Physicals	5182	28%	1407	22%	6589	27%
Responding to Episodic Illness/Injury a) Information Gathering/ Initial Assessment	4893	27%	1457	23%	6350	26%
b) Treatment	2483	14%	535	8%	3018	12%
Recheck on Previously Identified Episodic Illness or Injury	182	*	120	2%	302	1%
Management of Chronic Illness	564	3%	60	*	624	3%
Immunization Vaccination	1	*	12	1%	13	*
Verification/Compliance	343	2%	184	3%	527	2%
Records Preparation/Update	373	2%	932	15%	1305	5%
Referral	332	2%	430	7%	762	3%
Counseling/Education	1202	7%	958	15%	2160	9%
Other Services	2774	15%	264	4%	3038	12%
TOTAL	18329	100%	6359	100%	24688	100%

*Less than 1%

SOURCE: Contact and Screening Logs

On both elementary and secondary school levels, the most frequently provided health service was screening and physical examinations, followed by information gathering/initial assessment. These two health services combined

accounted for 53% of all health services rendered this year. For many of the health service categories listed in the table, a distinct trend can be seen in the number of particular health services delivered at each academic level.

Elementary schools account for an overwhelming majority of the services rendered in six major service categories:

1) Screenings and Physicals	78.6%
2) Information Gathering/Initial Assessment	77.0%
3) Treatment	82.3%
4) Management of Chronic Illness	90.4%
5) Verification/Compliance	65.1%
6) Other Services	91.3%

Secondary schools demonstrated a large majority of the services rendered on only one major category, records preparation/update accounting for 71.4% of the total services performed.

A combined analysis of health service patterns for both academic levels (see TOTAL column) reveals that screenings and physicals were the most frequently delivered service, followed by information gathering/initial assessment. Accounting for the third, fourth, and fifth largest proportions of health services across combined academic levels were other services, treatment, and counseling/ education, respectively. The remaining health service categories each accounted for 5% or less of the total health services rendered during the 1983-84 year.

D. TYPES OF SCREENINGS PERFORMED

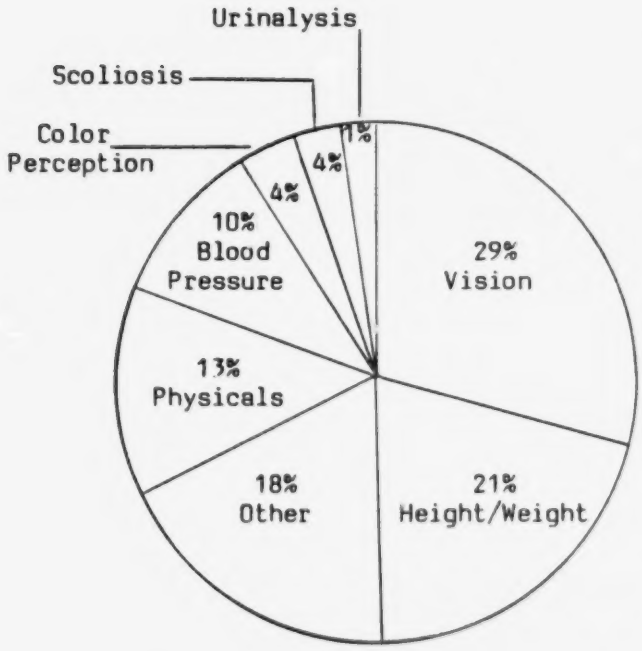
The performance of a variety of health screenings has been a major emphasis of the BSHDP, as illustrated by the previously reported finding that screening was the most frequently delivered health service. During the past

four years, health service staff have performed over 33,000 screenings and physical examinations. Analyses of the screening data collected for the 1983-84 year are displayed in Figure 2 and Table 8.

Illustrated in Figure 2 is the overall percentage for each type of screening performed in the five participating schools. Over 6,500 screenings were performed during the school year, with vision accounting for the largest proportion (29%). The second most frequent type of screening was height/weight, followed by the other category and blood pressure. Color perception and scoliosis each accounted for 4%, with urinalysis generating the smallest proportion (approximately 1%) of all screenings.

Figure 2

PERCENTAGE OF TYPES OF SCREENINGS PERFORMED*
IN THE FIVE PARTICIPATING SCHOOLS



*Total Number Screenings = 6589

SOURCE: Screening Log

Table 8 displays the number and percentage of the type of screenings performed in elementary and secondary schools. Inspection of the school totals indicates that elementary schools accounted for 79% of all screenings conducted during the year. Most of these screenings were for vision, height/weight, physicals and blood pressure, together accounting for 73% of screenings performed on this academic level. In the secondary schools these four screening categories accounted for 76% of the annual total, with physicals clearly accounting for the single most frequent health service.

Comparison of the elementary and secondary school figures revealed marked differences in the types of screenings performed. Secondary school student received more than twice the number of physicals than elementary school students, while elementary school students received almost ten vision screenings for each one performed at the secondary school level. Significantly, all 61 urinalysis screenings occurred in the secondary schools, while over 90% of all height/weight checks were performed at the elementary level.

Table 8

NUMBER AND PERCENT OF TYPES OF SCREENINGS PERFORMED
IN THE ELEMENTARY AND SECONDARY SCHOOLS

Type of Screening	Elementary Schools N	%	Secondary Schools N	%	TOTAL N	%
Vision	1717	33%	178	13%	1895	29%
Scoliosis	168	3%	126	9%	294	4%
Color Perception	132	3%	101	7%	233	4%
Height/Weight	1273	25%	141	10%	1414	21%
Blood Pressure	520	10%	135	10%	655	10%
Urinalysis	0	-	61	4%	61	1%
Hearing†	0	-	8	*	8	*
Dental†	2	*	0	-	2	*
Physicals	261	5%	606	43%	867	13%
Other	1109	21%	51	4%	1160	18%
TOTAL	5182	100%	1407	100%	6589	100%

*Less than .5%

†Hearing and dental screenings are performed by the County Health Department.

SOURCE: Screening Log

As will be discussed in Section F, Referral Mechanism, approximately 5% of all screenings performed during 1983-84 necessitated referral to a health care provider. While this relatively small percentage may bring into question the utility and cost-effectiveness of the wide variety of screenings routinely provided by the BSHDP, their value is best evidenced by the medical consequences that result when a major health problem remains undetected. A particularly vivid example is provided by scoliosis, which is typically detected through physical examination or scoliosis screening. Scoliosis is curvature of the spine that often results in profound physical debilitation if untreated. According to Kenneth Love, Vice-President of the National Scoliosis Foundation, approximately one of every ten adolescent children develops

scoliosis and one in every five untreated cases exacerbates into adulthood. This condition causes compression of the lungs and enlargement of the heart as a result of rib rotation. The value of early detection is clearly illustrated by Mr. Love's description of his personal experience with the condition.

> "I am lying at home in a body brace for the second time in four years, recovering from surgery that should have never been necessary. I have scoliosis, a curvature of the spine that was not detected and treated early enough. So, at age 34 I have a spine with 14 fused vertebrae, two long steel rods, clamps, nuts, bolts, and wire holding it together. I am unable to lift my eight-month-old son." (Gannett Newspaper)

The BSHDP health service staff have met the challenge of early health problem detection through the provision of more than 1,100 physical examinations and scoliosis screenings during the 1983-84 year. Two structural characteristics of the BSHDP's health service component have been primarily responsible for the provision of these services:

1) the size of the health service staff, which is large relative to the number of health professionals employed by other school health projects;

2) the employment of nurse practitioners, who are legally empowered to perform physical examinations.

In addition to scoliosis prevention, innovative staff utilization patterns have enabled the health service team to detect a variety of health problems which, if undiagnosed, would result in short or long term disability or contagious exposure to others. The true of the screenings and physical examinations performed by BSHDP staff is, perhaps, best evidenced by the descriptive case studies which follow:

CASE OF BRIAN
(Grade 9)

The results of a routine vision screening performed by the school nurse, determined that Brian was suffering from a chronic vision problem of indeterminable nature. The case was accorded priority status and immediate communication was established with Brian's parents. Despite initial resistance, Brian's family was convinced to seek immediate professional help. Referral to a professional ophthalmologist resulted in early detection and treatment which, according to the school nurse, was necessary in order to save Brian from a possible permanent loss of vision.

CASE OF REGGIE
(Grade 11)

On a routine scoliosis screening, Reggie was found to have left lumbar curve. He was referred by the nurse practitioner to Children's Hospital Orthopedic Clinic, where his condition was diagnosed as severe scoliosis. He now wears a brace 22 hours per day. The nurse practitioner stated that if it were not for this routine screening, Reggie's condition would have advanced, resulting in permanent disability.

E. COMPLIANCE WITH IMMUNIZATION MANDATE

Assuring student compliance with the state's immunization mandate is a principal activity of the health service staff. Reported in Table 9 is the percentage of students in each of the five schools in compliance as of July 1, 1984. All five schools achieved exceptionally high compliance rates, with almost all students having up-to-date immunization records. Compliance was achieved for 96.3% of the 2,052 elementary students, while comparable rates were observed at the secondary level, with 93.3% of the 1,669 students meeting the compliance mandate. The overall compliance rate for the five participating schools was 95% (especially high for the high transient rate characteristic of

student populations). All five schools demonstrated compliance rates exceeding 90%, with the majority of non-compliance cases achieving compliance status during the summer months. An analysis by institution is presented in Table 9.

Table 9

PERCENTAGE OF STUDENTS IN COMPLIANCE WITH IMMUNIZATION MANDATE AS OF JULY 1, 1984

School	Enrollment	% Students in Compliance
School #53	883	94%
School #68	312	98%
Futures Academy	857	98%
Bishop Turner High School	537	98%
Kensington High School	1132	91%
TOTAL	3721	Average: 95%

SOURCE: Monthly Staff Reports

F. REFERRAL MECHANISM

One of the most salient components of the BSHDP is its comprehensive referral mechanism. During the past four project years, health service staff have made over 3,000 referrals to health care providers. This figure provides an index of the number of health problems detected that required primary care, and illustrates the emphasis health service staff place on early detection of health problems. Overall, it illustrates the value of the health services rendered to students participating in the BSHDP.

Referrals arise from two independent sources: 1) walk-in student contact and 2) screening. For the 1983-84 school year, health service staff made 762 referrals. Walk-in student contact was the source for 67% (N=511) of these referrals, with the remaining 33% (N=251) resulting from screening. A separate

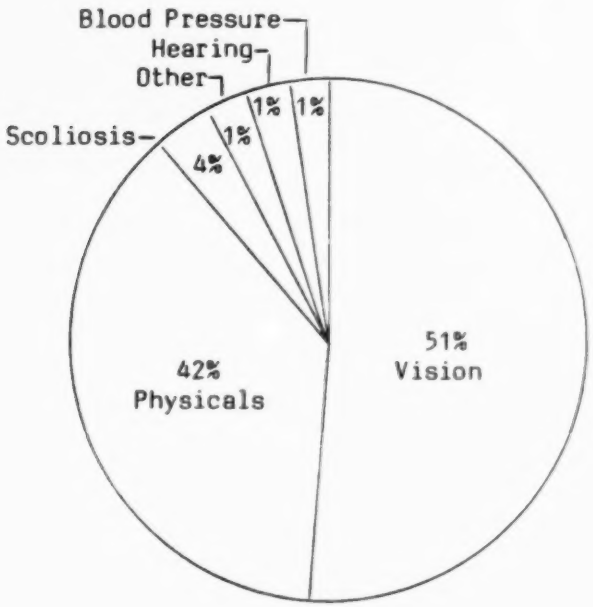
analysis of these referral sources revealed that, of the total number of walk-in contacts (N=9268), 6% resulted in referral, while 4% of all screenings necessitated referral.

1. Types of Screenings Resulting in Referral

Of interest to the present analysis was a determination of the types of screenings that most often revealed health problems requiring referral. As illustrated in Figure 3, it was found that vision screenings generated the largest proportion (51%) of the 251 screening referrals made during the school year, which is consistent with findings from previous project years. Physical examinations generated the second largest proportion of screening referrals (42%), followed by scoliosis referrals. Relatively few referrals resulted from blood pressure or hearing screenings. Urinalysis and dental screenings generated less than .5% of all screening referrals and thus were not included in the figure. Screening assessments that did not result in referral included color perception and height/weight. As stated earlier, 4% of all screening assessments conducted during the year resulted in referral to health care providers.

Figure 3

PERCENTAGE OF TYPES OF SCREENINGS RESULTING IN REFERRAL*



*Total Number Screenings Resulting in Referral = 251

SOURCE: Screening Log

2. Total Contacts Per School Resulting in Referral

Table 10 displays the number and percent of all student contacts, including screenings and walk-ins, that resulted in referral. The percentage reported for each school is based on the total number of contacts made in each of the schools (see Table 5 for total contact figures per school). For School #53, 4% of the 4,867 student-staff contacts necessitated referral. Three percent (3%) of the contacts made in School #68 and 2% of those made in Futures Academy resulted in referral. Three percent (3%) of the total number of contacts made in the three elementary schools resulted in referral, representing consistent findings with the previous project year. Inconsistent with

the 1982-83 year, the two secondary schools together generated referrals for 11% of the contacts made (a proportional increase of nearly three times over the previous year). Of all five schools, Kensington High School generated the single largest number of referrals, accounting for 42% of all referrals made during the year. Overall, 5% of the contacts made in the five participating schools resulted in referral to a health care provider. This represents a 67% increase in the number of referrals made this year over the previous year, which is particularly meaningful in light of the decrease in the number of student contacts during the 1983-84 year (i.e., 1,700 fewer contacts made).

Table 10

NUMBER AND PERCENT OF STUDENT CONTACTS* PER SCHOOL RESULTING IN REFERRAL

School #53		School #68		Futures Academy		Total Elementary Schools		Bishop Turner		Kensington		Total Secondary Schools		Total	
N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
198	4%	59	3%	75	2%	332	3%	112	11%	318	10%	430	11%	762	5%

*Total Number Contacts = 15,857

SOURCE: Contact and Screening Logs

3. Types of Health Problems Necessitating Referral

The types of health problems that necessitated referral during the 1983-84 year are presented in Table 11. Inspection of "Problem Type" totals shows eye disorders to be the most frequent cause of referral, generating 31% of the 762 referrals made.

Table 11

NUMBER AND PERCENTAGE OF TYPES OF REFERRALS MADE IN THE ELEMENTARY AND SECONDARY SCHOOLS

Problem Type	Elementary Schools		Secondary Schools		TOTAL	
	N	%	N	%	N	%
Eye Disorders	154	47%	82	19%	236	31%
Ear Disorders	13	4%	33	8%	46	6%
Dental	10	3%	18	4%	28	4%
Respiratory	6	2%	11	3%	17	2%
Nose and Throat	13	4%	21	5%	34	5%
Infections	3	1%	3	1%	6	1%
Allergic Disorders	18	5%	9	2%	27	4%
Skin	40	12%	27	7%	67	9%
Heart and Cardiovascular	10	3%	11	3%	21	3%
Blood Disorders	7	2%	4	1%	11	1%
Gastrointestinal	1	*	20	5%	21	3%
Genitourinary	4	1%	44	10%	48	6%
Musculoskeletal Disorders	37	11%	56	13%	93	12%
Nutrition	3	1%	5	1%	8	1%
Neurological Disorders	1	*	1	*	2	*
Social-Behavior Problems/ Mental Disorders	0	0%	2		2	*
General Symptoms, Signs, and Ill-Defined Conditions	7	2%	18	4%	25	3%
Miscellaneous	2	1%	4	1%	6	1%
Need for Immunization	1	*	49	11%	50	7%
Need for Primary Provider	2	1%	9	2%	11	1%
Need for Dental Provider	0	0	2		2	*
Endocrine and Metabolic	0	0	1	*	1	*
TOTAL	332	100%	430	100%	762	100%

*Less than .5%

SOURCE: Referral Log

Musculoskeletal disorder was the second most frequent cause of referral accounting for 12% of the total. The third greatest cause of referral was skin disorders, followed by need for immunization, genitourinary, and ear disorders. The remaining 16 problem types each accounted for 5% or less of the referrals made during the school year.

An analysis by academic level indicated that, in elementary schools, eye disorders accounted for the largest number of referrals. This problem type generated nearly half (47%) of the 332 referrals made in the three elementary schools. Skin disorders on the elementary level necessitated the second largest number of referrals, followed by musculoskeletal disorders. Problem types that did not generate any referrals for the year in the elementary schools were a) social/behavior problems, b) need for dental provider, and c) endocrine and metabolic disorders.

On the secondary school level, eye disorders also accounted for the largest category representing 19% of all referrals made. The second and third most frequent causes of referral were musculoskeletal and need for immunization, respectively. At least one referral was made for every category on this academic level.

4. Priority Referral

In September of 1982, health service staff began to designate the severity of the health problems requiring referral by assigning referrals priority or non-priority status. A referral is given priority status only if the underlying health problem requires project staff to contact the parents within 24 hours of detection for the purpose of obtaining immediate medical attention from a primary health care provider. Therefore, a health problem necessitating

priority referral is one which, if not treated promptly, would likely result in pain or discomfort, short or long term disability, or contagious exposure to others.

Table 12 displays the percentage of the types of referrals that were given priority status during the 1983-84 year. As indicated by the footnote, 140 or 18% of the 762 referrals made from September through June required immediate medical attention (down from 31% in the previous year). This table shows that the leading cause of priority referral was eye disorders. Musculoskeletal disorders accounted for the second highest percentage, followed closely by skin problems. Nose and throat, allergic diseases, and ear disorders together generated 21% of the priority referrals. The rank order of categories for priority referral was consistent across both academic levels.

Table 12

TYPES OF HEALTH PROBLEMS MOST FREQUENTLY NECESSITATING PRIORITY REFERRAL*

Problem Type	Number Priority Referrals	Percent of Total
Eye Disorders	38	27%
Musculoskeletal Disorders	19	14%
Skin	15	11%
Ear Disorders	9	7%
Nose and Throat	10	7%
Allergic Disorders	10	7%
TOTAL:	101	73%

*Total Number Priority Referrals = 140

SOURCE: Referral Log

5. Referral Closure Rates

One of the outstanding features of the BSHDP's health service component is its staff's exemplary referral follow-up procedures. In their effort to assure that referrals are acted upon appropriately, health service staff often find it necessary to utilize a variety of parent contact procedures, including note home, telephone call to parent's place of business, and home visits. When parents refuses to comply with either the referral or the child's prescribed treatment plan, staff often involves a family relative in the referral case. In fact, health service staff have indicated that, when possible, soliciting the support of a relative typically results in successful referral completion. These procedures, coupled with staff's contact with both private and public health care providers, produce high rates of referral closure. As described earlier in this report, a referral is considered closed only when one of the following conditions has been evidenced:

a) condition returns to normal based on BSHDP staff recheck

b) formal treatment begins or condition under authoritative observation;

c) no problem detected by authoritative referral source;

d) authoritative source indicates problem is resolved.

Displayed in Table 13 is the number and percent of the various referral outcomes made in each school from September 1983 to June 1984. The highest rate of referral completion was achieved by Bishop Turner, closing 91% of its referrals. The lowest completion rate was in School #68. Overall, 75% of the 762 referrals made in the five schools during the school year were brought to completion; 15% of the referrals remained open, and 10% were reported as non-compliance. It should be noted that the majority of the referrals reported

as open, were brought to completion in the early part of the summer subsequent to the evaluation period, and that five of every six (83%) non-compliance referrals were closed. Health service staff have indicated that almost all non-compliance referrals typically are closed by September of the following school year (in this case, by September 1984).

Table 13

NUMBER AND PERCENT OF REFERRAL OUTCOMES AS OF JULY 1, 1984

School	Total Number of Referrals	Closed N	Closed %	Open N	Open %	Non-Compliance N	Non-Compliance %
School #53	198	141	71%	57	29%	0	0%
School #68	59	44	74%	10	17%	5	9%
Futures Academy	75	50	67%	25	33%	0	0%
Bishop Turner	112	102	41%	10	99%	0	0%
Kensington	318	235	74%	16	5%	67	21%
TOTAL	762	572	75%	118	15%	72	10%

G. ADDITIONAL EVIDENCE

The evaluation findings presented in this chapter provide useful indicators of the value and impact of the BSHDP's health service component. The results of the numerous data analyses have clearly demonstrated both the large number and the extensive range of services provided by the health service staff. It was also seen that the provision of quality health care is largely dependent on the presence of a full complement of dedicated health professionals. However, while the necessity for documenting the success of the demonstration project in this manner is apparent, such data do not adequately

illuminate perhaps the most significant achievements of health service staff: their dramatic, positive influence in the lives of individual students. It is in this light that the following two case studies are presented.

CASE OF ROBERT
(Grade 10)

Robert, who reported severe stomach pain, was sent directly to the school clinic. Upon examination by the nurse his stomach was found to be severely distended. This health care professional, recognizing the problem to be a ruptured appendix, promptly arranged for emergency transportation to a local hospital, where the condition was confirmed and immediate surgery performed. Post-surgical care necessitated a two-week hospital stay. Robert was discharged, with follow-up visits indicating successful treatment of the problem. Robert's life was saved as the result of the astute and responsible intervention of health services staff.

CASE OF MARTHA

This 14-year-old female was discovered to have slept all night in the school bathroom in September, 1981. When brought to the school health office and questioned, she said that her mother had been beating her and was afraid to go home. Physical examination by the nurse practitioner revealed old scars, as well as fresh scratches and bruises. When the parent came to the health office for a meeting, she was intoxicated and began to attack her daughter. The nurse practitioner contacted a variety of relevant agencies to report the abuse and Martha was placed temporarily in a foster home. However, on the two occasions that she visited home, she ran away and came back to the nurse practitioner. At this point, the nurse re-contacted the agencies to inform them that she would keep Martha at school with her until appropriate action was taken. On the same day, all interested parties met at the health office, and the child was permanently placed in a foster home.

IV. HEALTH EDUCATION COMPONENT EVALUATION RESULTS

As described in Chapter II, the health education component of the BSHDP for the 1983-84 school year consisted of a 13-week instructional program designed to encourage student participation in their own regimen of health maintenance. Classes met two times weekly for 45 minutes each (total instructional time, 19.5 hours). Two levels of a health education curriculum were developed for use with fourth and sixth grade students in the three elementary schools participating in the BSHDP. Fourth grade curriculum objectives focused on the development of healthful behaviors and positive attitudes toward the maintenance of good health. The sixth grade curriculum, primarily cognitive in nature, was designed to expand student knowledge of organ systems, disease, and the harmful effects of drug, tobacco, and alcohol use. Both levels emphasized the importance of observing safety measures in daily life and stressed concepts relevant to securing high quality health care. This latter emphasis encouraged students to adopt a "consumer" orientation in their contact with health care providers.

A. EVALUATION DESIGN

Instrumentation

Three separate paper-and-pencil instruments were constructed by the project evaluator to assess the impact of the health education program.[1] The Buffalo School Health Attitude Survey was designed to measure fourth and sixth grade students' attitudes toward various health-related practices, behaviors and lifestyles. The Buffalo School Health Knowledge Test was designed to assess students' knowledge of health and health-related concepts developed in

[1] These instruments are contained in Appendix C.

the sixth grade curriculum. Due to the behavioral, rather than cognitive, orientation of the fourth grade curriculum, the Knowledge Test was developed specifically for use with the sixth grade curriculum. The Buffalo School Health Student Problem Checklist was constructed to identify project impact on existing health and related problems at the fourth grade level.

Subjects and Testing Procedure

The treatment group was comprised of fourth and sixth grade classes in the three BSHDP elementary schools scheduled to participate in the spring, 1984 health education program. Fourth and sixth grade students from a neighboring elementary school lacking prior exposure to the demonstration project acted as the control group. The duration of the pretest-posttest interval for all classes was 14 to 15 weeks. The Attitude Survey was administered to all students in the evaluation, while the Knowledge Test was administered only to sixth grade students, and the Problem Checklist was administered only to fourth grade students. These evaluation procedures were specifically designed to provide evidence regarding the effects of the new curriculum developed by the health educator, who began her position in the beginning of the 1983-84 school year. Item analyses of pilot test results provided technical data useful to recent revision as well as providing evidence of the reliability of the instruments in current use.

B. RESULTS OF TESTING

Test Score Analysis

Pretest-posttest treatment-control group comparisons for the Health Attitude Survey were analyzed for grades four and six. Changes from pre- to posttest on the Attitude Survey were analyzed by subjecting data to a within-

groups t test analysis of mean differences. The results of the analysis for the treatment and control groups at both grade levels are presented in Table 14.

Table 14

RESULTS OF WITHIN-GROUPS STUDENT'S t TEST ANALYSIS OF THE BUFFALO SCHOOL HEALTH ATTITUDE SURVEY - GRADES 4 AND 6

	Pretest			Posttest		Mean Difference	Standard Error	Change in SD Units	t Value	df	Significance†
Group/Grade	$\bar{X}$	SD	N	$\bar{X}$	SD						
Grade 4											
Treatment	40.58	5.65	93	46.17	5.48	5.59	.565	.99	9.91	92	p<.0001
Control	40.98	5.76	50	40.34	8.65	-.64	.978	.11	-.65	49	NS*
Grade 6											
Treatment	40.14	5.96	93	44.24	5.17	4.09	.615	.69	6.66	92	p<.0001
Control	42.37	5.29	52	42.94	6.59	0.58	.649	.11	.89	51	NS*

†One-tailed test of significance.
*Nonsignificant

A comparison of group means ($\bar{X}$) indicates that the treatment groups in both grades demonstrated significant posttest gains ($p<.0001$) on the Attitude Survey when compared with respective pretest measures. These results clearly demonstrate the existence of a "positive treatment effect" on student attitudes directly attributable to the project's health education component. In addition to the statistical significance of the gains, mean pretest-posttest differences of 5.59 and 4.09 for grades four and six, respectively, reflect improvements approaching a full standard deviation. According to standard statistical criteria, gain scores of less than one half this magnitude are sufficient evidence of meaningful educational impacts. Control groups did not demonstrate a significant gain on these same measures. In fact, the control group in grade 4 actually lost .64 of a point on the posttest.

Without question, both curriculum content and instructional methodologies have succeeded in fostering positive attitudes toward health maintenance in students participating in the project's health education component.

The instructional value of an educational delivery system is strongly supported by student gain on related achievement measures. Appropriately, the Buffalo School Health Knowledge Test was constructed specifically for the project's educational curriculum during the 1982-83 year. In the beginning of the 1983-84 school year, the project hired a new health educator, who immediately began to reconstruct the health education program and instructional curriculum. In January of 1984, the Knowledge Test was substantially revised by the independent evaluator in collaboration with the health educator. This revision resulted in a 47-item multiple-choice test with four alternatives (i.e., a, b, c, or d) for each item. Treatment and control students were pre-and posttested with the measure during the spring of 1984. The obtained student test scores were used in an analysis to determine the psychometric properties of the test. The results of the analysis demonstrated that the test items were of an appropriate level of difficulty (average p=.50), and that the overall instrument was capable of generating highly reliable results. The internal consistency reliability coefficient (i.e., Cronbach's alpha), calculated on treatment and control student prestest scores (N=172), was .82.[2]

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2 The Evaluator wishes to thank the Health Educator, whose valuable assistance in the revision of the Health Knowledge Test has substantially enhanced the quality and reliability of the measure.

As pretest-posttest control group designs are well suited for comparison techniques, Knowledge test scores of sixth grade students were analyzed with the Analysis of Covariance, a statistical technique which performs an adjustment on posttest mean scores on the basis of any pretest group differences. The results of this analysis are reported below in Table 15.

Table 15

DESCRIPTIVE STATISTICS AND ANALYSIS OF COVARIANCE RESULTS FOR THE BUFFALO SCHOOL HEALTH KNOWLEDGE TEST - GRADE 6

	Pretest			Posttest			Raw Score	Change in SD	Effect			Signif-
Group	N	$\bar{X}$	SD	X	$\bar{X}$*	SD	Change	Units*	Size*	df	F	icance
Treat-ment	100	21.47	6.47	29.22	30.54	6.92	+9.07	+1.40	1.11	1/147	46.59	p<.0001
Con-trol	50	27.76	6.29	26.20	23.55	6.26	-4.21	-.67				

*Adjusted for covariate.

Comparison of the pretest-posttest mean scores of the treatment and control groups clearly demonstrate the program's positive impact on student knowledge of health-related issues. With pretest group differences held constant, students participating in the BSHDP gained over 9 points at posttest, while the control students lost over 4 score points. In addition, the mean pretest-posttest score change of the treatment group reflects a magnitude of 1.40 standard deviation units. Furthermore, the results of the Analysis of Covariance demonstrate that the treatment group significantly outperformed the control group at posttest ($p<.0001$), with the size of this effect over one standard deviation unit.

In conclusion, the magnitude of the treatment group's pre- to posttest score increments, together with the statistical significance of the treatment-control group comparison tested by the covariance analysis, strongly suggest

that the health education component of the BSHDP generated both statistically significant and educationally meaningful increases in student knowledge of health and health-related concepts.

The value of a health delivery model is perhaps best evidenced by a declining rate of health-related problems in student populations. The Buffalo School Health Student Problem Checklist (derived from the Mooney Problem Checklist) was designed specifically to assess the combined impact of health services and health education on commonly reported health and health-related problems. A pretest-posttest control design was used, with data being subjected to a t test analysis of mean differences. The results of the analysis are reported in Table 16. The results demonstrate a significant reduction ($p<.01$) in self-reported health problems for BSHDP students, while a comparable student group not participating in the project showed a small and nonsignificant decrease in reported health problems.

Table 16

RESULTS OF WITHIN-GROUPS STUDENT'S t TEST ANALYSIS OF THE BUFFALO SCHOOL HEALTH STUDENT PROBLEM CHECKLIST - GRADE 4

Group	Pretest $\bar{X}$	Pretest SD	Pretest N	Posttest $\bar{X}$	Posttest SD	Mean Difference	Standard Error	Change in SD Units	t Value	df	Significance†
Treatment	40.54	8.53	93	42.44	8.94	1.90	.772	.22	2.47	92	$p<.01$
Control	41.32	9.73	50	41.80	10.64	.48	1.117	.05	.43	49	NS*

†One-tailed test of significance.
*Nonsignificant

Both the health service and health education components have clearly succeeded in providing a health delivery system of meaningful impact for the populations they serve.

C. CONCLUSIONS AND RECOMMENDATIONS

The health education component of the demonstration project was originally conceived as an integral facet of the total school health demonstration services to be provided to participating schools. Furthermore, the health service and health education components were designed to complement each other through a coordination of their activities, resulting in what was intended to be a mutually-reinforcing delivery system. During the first 12 to 15 months of the BSHDP, efforts were made to establish such a delivery system. These efforts included 1) the sponsoring of health fairs, 2) the purchase of over 300 health-related audio-visual and curriculum materials, 3) the involvement of the schools in special prevention programs provided by community agencies, and 4) the establishment of a building-level school health task force including parents, teachers, the school principal, and a number of the BSHDP staff. More significantly, attempts were made to coordinate the health educator's instructional schedule with the activities of health service staff in order to effect a mutual reinforcement of health education learning.

Since this initial effort, attempts have been made to coordinate the health service and health education components of the BSHDP. Both qualitative and quantitative evaluation findings point to substantial improvements in both curriculum and instructional delivery systems of the education component during the 1983-84 project year. Successful implementation of the mutually-reinforcing health delivery system was greatly enhanced by the hiring of a health education specialist during the 1983-84 year. This health educator restructured the project's health education component and constructed a new curriculum. In addition, she played an integral role in the revision of the Buffalo School Health Knowledge Test, and was successful in increasing the length and frequency of health education instruction in the classroom. These

activities, in addition to the results of the student testing conducted this past spring, clearly indicate that continued support of the health educator's efforts is warranted.

V. HIGHLIGHTS OF EVALUATION FINDINGS, 1980-1984

Since documentation of project activities commenced in September of 1980, numerous variables have been subjected to scrutiny. Many of these variables, such as types of health services rendered, had been selected for a continuous analysis since project inception. However, evaluation findings from the first two project years had demonstrated that several variables remain relatively invariant over time, and thus were eliminated from the 1982-83 and 1983-84 evaluations. Other variables have not been the focus of continuous study; that is, they have been subjected to a "one-shot" analysis over a limited period of time. In order to give the reader an overview of project processes and outcomes since project inception, a capsule summary of these findings is presented in the following sections.

A. INITIATORS OF STUDENT CONTACTS

The various persons initiating student contact with health service staff was a focus of study in previous evaluations of the BSHDP. A consistent pattern of contact initiation emerged for the entire BSHDP student population, as well for a random sample of fourth, sixth, and tenth grade students. On both the elementary and the secondary school levels, the data indicated that students are the most frequent initiators of contact with health service staff, accounting for 51%-64% of all contacts. On the elementary school level, teachers initiate one-quarter of the student-health service staff contacts, while only 11%-19% are initiated by BSHDP staff. On the secondary school level, however, BSHDP staff initiate 30%-39% of the contacts, with teachers playing almost no role in contact initiation.

B. MODES OF PARENT CONTACT

In January of 1982, a random sample of students was selected from the BSHDP student population for in-depth study. Each of the 200 students in the sample was tracked individually over a four-month period (see 1981-1982 Final Report). One of the findings of this study was that telephone contact and sending notes home were the most frequently used modes of parent contact. Health service staff made 53% of their contacts with parents by telephone and 40% by sending a note to the home. Parents visited the school in 5% of the contacts. Visits made by health service staff to the home accounted for the remaining 2% of the parent contacts.

C. PERCENTAGE OF STUDENTS SERVED

Perhaps the most salient finding of the individual student sample analysis was that more than half (58%) of the 200 students sample utilized project health services over a four-month period. Over one-half of the students in grade 4 and 47% of the students in grade 6 received health services, while more than four fifths (84%) of the tenth grade sample established contact with BSHDP health service staff. These findings conclusively demonstrate that BSHDP's health service component reaches a large proportion of its student population. Empirical evidence indicates that the large number of student contacts typically made by health service staff are not attributable to a small proportion of students generating a disproportionately large number of "repeated" contacts. The randomization of selection procedures ensures that a larger percentage of participating students receive health services over a full school year than those surveyed over a limited four month period.

Additional analyses of student samples were performed to determine the proportion of students receiving major types of screening from October, 1981 through June, 1982. Of the fourth grade students in the sample, 84% were given vision screenings, 80% were checked for height and weight growth, 65% were screened for blood pressure, and 33% received physicals. On the tenth grade level, 94% to 98% of the students were given vision, height/ weight, scoliosis, and blood pressure screenings. Physical examinations were performed on 67% of the students in grade 10. These results demonstrate that a large proportion of students directly benefit from the screening services provided by the BSHDP.

D. HEALTH PROBLEMS ENCOUNTERED

Evaluation results from all four project years clearly indicated general illness to be the single most frequently detected health problem, accounting for approximately one-fourth of all health problems encountered. An in-depth analysis of this problem category, conducted during the 1981-1982 school year, revealed stomachache to be the predominant cause of general illness contacts, accounting for 31% of all contacts. Headache was the second most frequently detected general illness. These two categories combined generated 60% of all general illnesses encountered during the year.

Given the consistent trends observed in these specific illness categories, in addition to information obtained from the analysis conducted during the 1981-82 year, the categories were combined to form a general classification entitled: "general symptoms, signs, and ill-defined conditions". Use of this broader category began in the 1982-83 year and continues through the present.

Overall, analyses conducted through 1982-83 demonstrated no substantial changes in the types of health problems encountered. Consistent trends were observed over several years, with the same health problem types accounting for

very similar proportions of all health problems detected each year. Specifically, most health problems fall in the general symptoms category, followed by minor injuries and eye disorders. As a result, it was determined that a classification of health problems encountered need not be conducted during the 1983-84 year.

E. SCHOOL ATTENDANCE AND ACADEMIC ACHIEVEMENT

The impact of the health-promoting features of the BSHDP on school attendance and academic achievement was examined in a pilot study conducted during the 1981-1982 evaluation. It was hypothesized that an increase in student attendance would result from the improved health status fostered by the demonstration project. Similarly, it was thought that improved health would translate into higher levels of academic achievement in basic skill areas. Data on both variables were gathered from fourth and sixth grade students comprising the random sample described earlier. Since the study was regarded as a preliminary investigation, a no-treatment comparison (control) group design was not employed.

School attendance was analyzed by comparing the number of absences recorded for the 1979-1980 year with those recorded for the 1981-1982 year. Although absence data was obtained on 105 sample students, tests of statistical significance were not performed due to the insufficient number of matched scores. However, a frequency analysis did reveal that 41% of the fourth and sixth grade sample students were absent in excess of nine school days during 1979-1980 while only 27% of the students had in excess of nine absences for the similar 1981-82 period. Clearly, maturation is an alternative explanation for the observed increase in attendance; that is, the students were in the second and fourth grades during the 1979-1980 baseline year, and in the fourth and

sixth grades, respectively, during the 1981-1982 year. It therefore may be argued that, as students get older, they become ill less frequently. The validity of alternative explanation cannot be determined until an appropriate comparison group is examined. The evidence, nevertheless suggests that the BSHDP may foster an increase in student attendance.

In an effort to determine the possible effects of the demonstration project on student achievement in basic skills, Metropolitan Achievement Test (MAT) reading and math standard scores (NCE's) were collected for the students in the sample. MAT scores for 1979-1980 were compared statistically with those obtained during the 1981-1982 school year. Matched reading and math scores were available for both academic years on 28 sample students. The results of the pretest-posttest analyses are presented in Table 17.

Table 17

RESULTS OF REPEATED-MEASURES STUDENT'S t TEST ANALYSIS OF MAT READING AND MATH STANDARD SCORES (NCE's)

Test		N	$\bar{X}$	SD	Standard Score Change	t Value	df	Significance Value
Reading	1979-1980	28	36.39	15.44	10.39	4.73	27	p<.001*
	1981-1982	28	46.79	16.05				
Math	1979-1980	28	44.89	18.14	7.07	3.72	27	p<.001*
	1981-1982	28	51.96	12.77				

*Statistically significant

Statistical comparison of the two sets of reading scores revealed significant (p<.001) improvement in reading achievement from the 1979-1980 baseline year to 1981-1982, with an average score increment of 10.39 standard score points. The 28 sample students also evidenced a statistically significant (p<.001) improvement in math achievement, averaging a 7.07-point standard

score increment between the two testings. It is not known whether a group of similar non-participating students would have achieved comparable score gains over a two-year period.

The question of whether the BSHDP was the primary causative factor in students' increased attendance and improved basic skills achievement remains open. As stated earlier, a control group was not examined due to the preliminary nature of the study. However, these findings warrant further investigation of the effects of the BSHDP on student attendance and school achievement. In addition, they offer tangible leads for connecting project impact with any student variable presumed to be affected by health status.

APPENDIX A

GLOSSARY OF TERMS

BUFFALO SCHOOL HEALTH DEMONSTRATION PROJECT
GLOSSARY OF KEY TERMS

The following is a glossary of key terms to be used by the Buffalo School Health Demonstration Project staff to identify and classify specific health problem types. For each category of problems listed below, a brief description is provided accompanied by examples of common disorders. In addition, corresponding ICDA[1] codes for these diagnoses are listed, where applicable. A copy of these codes is attached for reference.

1. MINOR INJURIES - This category includes less severe types of injuries that can routinely be treated at the school site. Examples include minor cuts and abrasions, sprains and minor burns. Corresponding ICDA codes are 949.1, 920, 921, 922, 923, 924, 919, and 848.

2. MAJOR INJURIES/ACCIDENTS - This category includes more serious types of injuries that require treatment at a hospital or Article 28 facility. Examples include fractures, dislocations and cuts necessitating stitches. Corresponding ICDA codes are 949.2, 949.3, 929, 850, 851, 853, 879.8, 839, 803, 810, 809, 818, 827, 829 and 995.5.

3. EYE DISORDERS - This category includes problems relating to refractive errors (myopic, astigmatism), conjunctivitis, distance problems and foreign bodies in the eye. Corresponding ICDA codes are 367-369, 372-379 and 930.

4. EAR DISORDERS - This category includes problems such as otitus media wax buildup, vertigo syndrome or hearing loss problems. Corresponding ICDA codes are 380.1, 380.4, 381, 383, 384.2, 385, 386, 388, 389, 389.1 and 931.

5. DENTAL - This category includes problems relating to oral conditions. Examples of these conditions include cavities, tooth abscess or gum related problems. Corresponding ICDA codes are 520-528 and 112.0.

6. RESPIRATORY - This category includes problems of both the upper and lower respiratory systems. These include colds, sinusitis, asthma, pneumonia and influenza. Corresponding ICDA codes are 460, 461, 462, 478.9, 466.0, 466, 480, 481, 482, 491, 492, 493, 507.0, 511, 512 and 519.8.

7. NOSE AND THROAT - This category has two subcategories.

   a) Nasal disorders include nosebleeds, post nasal drip, foreign body in nose and nasal polyp. Corresponding ICDA codes are 784.7, 932, 472, 477, 471 and 478.1.

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[1] An adaptation of the International Classification of Diseases (9th Revision) was used.

b) Throat disorders include tonsilitis, strep throat and laryngitis. Corresponding ICDA codes are 463, 464, 474.0, 474.1, 475, 476 and 477.

8. INFECTIONS - This category refers to infectious diseases including viral, bacterial, parasitic, streptococcal (excluding streptococcal sore throat), and venereal diseases. Examples are herpes infections, mumps, scabies, scarlet fever and mononucleosis. Corresponding ICDA codes are 091, 098, 099.4, 131, 099.9, 132, 054.1, 077, 112.1, 054, 075, 077, 070, 057, 056, 055, 072, 052, 078.5, 033, 032, 011, 002, 003.0, 004, 005.0, 005.1, 009, 020, 071, 041, 034.0, 034.1, 580, 007.1, 006, 082.0, 088, 130, 133.0, 132, 131, 063, 127.4, 127.3, 127.0, 127.9 and 128.

9. ALLERGIC DISORDERS - This is a general category which includes any symptoms or reactions occurring that are known to occur as a result of some type of allergy. These may include wheezing, runny nose and hives. The general ICDA code corresponding to allergy is 995.3 (idiosyncratic allergic reaction).

10. SKIN - This category includes infections and inflammatory or general skin disorders. Examples include impetigo, heat rash, pruritis and poison ivy. Corresponding ICDA codes are 600, 682, 683, 686.1, 686.9, 110, 690, 691.0, 691.8, 692, 708, 695.1, 696, 696.3, 705.1, 706, 700, 698, 704.0, 704.1, 704.2, 703, 709.0, 709.2, 228.0, 216.0, 757, 078.1 and 709.9.

11. HEART AND CARDIOVASCULAR - This category represents specific disorders of the circulatory system. Examples of these disorders include hypertension, heart murmurs, rheumatic fever and congenital anomalies of the heart. Corresponding ICDA codes are 390, 401, 746, 747, 427, 785 and 429.

12. BLOOD DISORDERS - This category represents disorders such as anemia, sickle cell and coagulation defects. Corresponding ICDA codes are 280, 282, 282.6, 283, 286, 287, 289 and 204.

13. GASTROINTESTINAL - This category includes general and infectious disorders of the digestive system including gastritis, appendicitis, hernias, diarrhea and food poisoning. Corresponding ICDA codes are 789.1, 533, 530, 535, 750.5, 540, 550, 553.1, 555, 555.1, 589.9, 560.0, 560.9, 751.3, 565.0, 566, 569, 569.1, 569.9, 578.1, 578.0, 530.0, 003.0, 004, 005, 008 and 009.3.

14. GENITOURINARY - This category includes disorders of the urinary tract and male and female genital disorders. Examples include kidney infections, bladder disorders, undescended testicle and menstrual problems. Corresponding ICDA codes are 753, 580, 581, 590, 593.6, 593, 595, 596, 598, 599.7, 599, 307.6, 752.5, 752.6, 752, 603, 604, 608.4, 611.1, 610.2, 259.1, 611, 614, 616, 620.2, 622, 623, 625.3, 625.2, 625.4, 626, 634, V22.2, 959.9 and 256.

15. MUSCULOSKELETAL DISORDERS - This category includes joint and bone disorders. These include arthritis, limb deformities and curvature of the spine. This category does not include acute injuries. Corresponding ICDA codes are 710, 711, 713, 714, 717, 718, 727, 728, 729, 730, 732, 733, 734, 736, 737, 754, 755 and 756.

16. NUTRITION - This category includes a series of disorders of the digestive system. Examples include obesity, constipation and non-specified abdominal pains. Corresponding ICDA codes are 263, 783, 779, 277, 278, 787, 564, 789, 276, 558 and 569.

17. NEUROLOGICAL DISORDERS - This category includes a variety of organic disorders of the nervous system. These include epilepsy, meningitis, convulsions and cerebral palsy. Corresponding ICDA codes are 320, 321, 323, 340, 343, 344, 348, 351, 356, 357, 359 and 780.

18. SOCIAL BEHAVIORAL PROBLEMS/MENTAL DISORDERS - This category includes two subcategories.

a) Social behavior problems specifically relating to children include stuttering, anorexia nervosa, conduct disturbances and hyperactivity. Corresponding ICDA codes are 307.0, 307.1, 307.2, 307.3, 307.46, 307.5, 307.6, 307.7, 307.8, 307.9, 309, 312, 313 and 314.

b) Mental disorders include a variety of psychiatric disturbances including personality disorders, schizophrenia and infantile autism. Corresponding ICDA codes are 292, 294, 295, 299.0, 300, 301, 302, 303, 304 and 306.

19. GENERAL SYMPTOMS, SIGNS AND ILL DEFINED CONDITIONS - This category includes a variety of symptoms and conditions that have not been associated with any of the other disorders. Examples include fever, chills, fainting and nausea.

20. MISCELLANEOUS - This category consists of three major subdivisions:

a) Tumors - Corresponding ICDA codes are 199, 239, 214, 215 and 216.

b) Poisoning - Corresponding ICDA codes are 977 and 989

c) General Allergic Reaction - Corresponding ICDA codes are 995.3, V06, V20, and V61.2.

21. NEED FOR IMMUNIZATION- Self explanatory.

22. NEED FOR PRIMARY HEALTH PROVIDER - This category should be used in addition to another primary health assessment category (#1-20) in those cases where the student lacks a primary health provider.

23. NEED FOR DENTAL HEALTH PROVIDER - This category should be used in addition to primary assessment Code #5 in those cases where the student lacks a dental care provider.

24. ENDOCRINE AND METABOLIC DISORDERS - This category denotes disorders involving the endocrine glands or the metabolism. Endocrine disorders include hypothyroidism, diabetes mellitus, hypoglycemia, and pituitary and adrenal gland disorders. Corresponding ICDA codes are 240.9, 243, 244, 245, 250,

251.2, 252, 253, 255, 259. Examples of metabolic disorders include abnormalities of amino acid, carbohydrate, and lipoid metabolism and immune deficiencies. ICDA codes corresponding to metabolic disorders are 270, 271, 272, 277, and 279.

25. OTHER - This category should be used only when none of the other 24 suspected problem categories represents an accurate description of the problem. An example would be the suspicion of drug abuse. It is anticipated that this category will be used most frequently to code student contacts which involve only information gathering (e.g., illness history) and records preparation/update, which are services typically associated with the first visit of a newly enrolled student.

NOTE: "Treatment" is defined as all attempts made by health service staff to remedy or to alleviate the presenting health condition.
"Initial assessment" is defined as a preliminary judgment of the condition, and is not meant to function as a definitive diagnosis.

APPENDIX B

PROJECT ACTIVITY LOGS AND MONTLY SUMMARY FORMS

BUFFALO SCHOOL HEALTH DEMONSTRATION PROJECT CONTACT LOG

Date	Person Served (Last, First)	Grade/ Room	Time In/Out	Suspected Problem Code A	Narrative	Parent Contact Code B	Project Services Code C	Narrative	Disposition Code D	Staff Code E

SUSPECTED PROBLEM CODE (A) - see Glossary for reference

1-minor injuries
  a) in school
  b) out of school
2-major injuries/accidents
  a) in school
  b) out of school
3-eye disorders
4-ear disorders
5-dental
6-respiratory
7-nose and throat
8-infections
9-allergic disorders
10-skin
11-heart and cardiovascular
12-blood disorders
13-gastrointestinal
14-genitourinary
15-musculoskeletal disorders
16-nutrition
17-neurological disorders
18-social behavioral problems/mental disorders
19-general symptoms, signs and ill defined conditions
20-miscellaneous
21-need for immunization
22-need for primary health provider
23-need for dental provider
24-endocrine and metabolic disorders

PARENT CONTACT CODE (B)

1-telephone
2-note home
3-home visit
4-parent visit to school

PROJECT SERVICES CODE (C)

1-responding to episodic illness or injury
  a) information gathering/ initial assessment
  b) treatment
2-recheck on previously identified episodic illness or injury
3-management of chronic illness
4-immunization
  a) verification/compliance
  b) vaccination
5-records preparation/update
6-referral
7-counseling/education
8-other services (specify)

DISPOSITION CODE (D)

1-rest
2-return to class
3-sent home
4-sent directly to health provider

STAFF CODE (E)

1-medical doctor
2-nurse practitioner
3-school nurse
4-health assistant
5-other (specify)

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SUSPECTED PROBLEM CODE (A) - see Glossary for reference

1-minor injuries
  a) in school
  b) out of school
2-major injuries/accidents
  a) in school
  b) out of school
3-eye disorders
4-ear disorders
5-dental
6-respiratory
7-nose and throat
8-infections
9-allergic disorders
10-skin
11-heart and cardiovascular
12-blood disorders
13-gastrointestinal
14-genitourinary
15-musculoskeletal disorders
16-nutrition
17-neurological disorders
18-social-behavior problems/mental disorders
19-general symptoms, signs and ill defined conditions
20-miscellaneous
21-need for immunization
22-need for primary health provider
23-need for dental provider
24-endocrine and metabolic disorders

PARENT CONTACT CODE (B)

1-telephone
2-note home
3-home visit
4-parent visit to school

DISPOSITION CODE (D)

1-rest
2-return to class
3-sent home
4-sent directly to health provider

STAFF CODE (E)

1-medical doctor
2-nurse practitioner
3-school nurse
4-health assistant
5-other (specify)

PROJECT SERVICES CODE (C)

1-responding to episodic illness or injury
  a) information gathering/ initial assessment
  b) treatment
2-recheck on previously identified episodic illness or injury
3-management of chronic illness
4-immunization
  a) verification/compliance
  b) vaccination
5-records preparation/update
6-referral
7-counseling/education
8-other services (specify)

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BUFFALO SCHOOL HEALTH DEMONSTRATION PROJECT

9/4/81

SCHOOL _____

MONTH _____

MONTHLY SCREENING LOG

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VISION								
Date	Initial	Recheck	Grade/ Room	Number Initial Screening	Number Recheck	Number Referral		

COLOR								
Date	Initial	Recheck	Grade/ Room	Number Initial Screening	Number Recheck	Number Referral		

HEIGHT/WEIGHT								
Date	Initial	Recheck	Grade/ Room	Number Initial Screening	Number Recheck	Number Referral		

BLOOD PRESSURE								
Date	Initial	Recheck	Grade/ Room	Number Initial Screening	Number Recheck	Number Referral		

SCOLIOSIS								
Date	Initial	Recheck	Grade/ Room	Number Initial Screening	Number Recheck	Number Referral		

URINALYSIS								
Date	Initial	Recheck	Grade/ Room	Number Initial Screening	Number Recheck	Number Referral		

DEVELOPMENTAL								
Date	Initial	Recheck	Grade/ Room	Number Initial Screening	Number Recheck	Number Referral		

HEARING								
Date	Initial	Recheck	Grade/ Room	Number Initial Screening	Number Recheck	Number Referral		

DENTAL								
Date	Initial	Recheck	Grade/ Room	Number Initial Screening	Number Recheck	Number Referral		

Date	Initial	Recheck	Grade/ Room	Number Initial Screening	Number Recheck	Number Referral		

BEST COPY AVAILABLE

SPORTS PHYSICALS

Date
Initial
Recheck
Grade/ Room
Number Initial Screening
Number Recheck
Number Referral

ROUTINE PHYSICALS

Date
Initial
Recheck
Grade/ Room
Number Initial Screening
Number Recheck
Number Referral

COH PHYSICALS

Date
Initial
Recheck
Grade/ Room
Number Initial Screening
Number Recheck
Number Referral

PHYSICAL (WORKING PAPERS)

Date
Initial
Recheck
Grade/ Room
Number Initial Screening
Number Recheck
Number Referral

Date
Initial
Recheck
Grade/ Room
Number Initial Screening
Number Recheck
Number

REFERRAL LOG

Date of Referral	Source Log (✓) Screening	Source Log (✓) Contact	Name	Grade/ Room	(✓) Priority Referral	Suspected Problem Code*	Provider Receiving Referral Code**	Referral Follow-Up Date	Method of Follow-Up Code***	Referral Source Problem Assessment (✓) BSHDP Assessment Confirmed	Referral Source Problem Assessment Revised Diagnosis Code*	Date Problem Resolved or No Longer Active	Evidence Code****	Comments

*SUSPECTED PROBLEM CODE (A) - see Glossary for reference
3-eye disorders
4-ear disorders
5-dental
6-respiratory
7-nose and throat
8-infections
9-allergic disorders
10-skin
11-heart and cardiovascular
12-blood disorders
13-gastrointestinal
14-genitourinary
15-musculoskeletal disorders
16-nutrition
17-neurological disorders
18-social-behavioral problems/mental disorders
19-general symptoms, signs and ill defined conditions
20-miscellaneous
21-need for immunization
22-need for primary provider
23-need for dental provider
24-endocrine and metabolic disorders
25-other

**PROVIDER RECEIVING REFERRAL CODE
1-GSHC
2-BCHC
3-ECMC
4-DH
5-DFP
6-Private Physician
7-Unknown
8-Other (specify)

***METHOD OF FOLLOWUP CODE
1-Child contact
2-Telephone
3-Letter mailed home
4-Home visit
5-Agency contact
6-Other (specify)

****EVIDENCE FOR REFERRAL DISPOSITION CODE
1-Condition returns to normal based on BSHDP staff recheck
2-Formal treatment begins or condition under authoritative observation
3-No problem detected from authoritative referral source
4-Authoritative source indicates problem is resolved
5-Non-compliance
6-Other (specify)

BUFFALO SCHOOL HEALTH DEMONSTRATION PROJECT STAFF TIME LOG

HA
NP
N
MD
OTHER

School _____ Month _____ Year _____ Name of Person Completing Form _____ Telephone Number _____

ENTER DATE →																												
Activity	MON	TUE	WED	THU	FRI	TOTAL	MON	TUE	WED	THU	FRI	TOTAL	MON	TUE	WED	THU	FRI	TOTAL	MON	TUE	WED	THU	FRI	TOTAL	MON	TUE	WED	THU	FRI	TOTAL
Delivery of Health Services Responding Directly to Illness or Injury*																														
Counseling/Education																														
Immunization																														
Referral and Follow-Up																														
Physical Exam																														
Screening																														
Conferences/Meetings/ Discussions with Parents																														
Conferences/Meetings/ Discussions with Teachers, Administrators, etc.																														
Organization/Planning/Staff Meetings																														
Record Keeping/Logging																														
Other (specify) (e.g., direct classroom instruction, etc.																														
TOTAL:																														

NOTE: Totals for each day (column totals - down) should not exceed the number of hours in a normal working day. Similarly, each weekly total (row totals - across) should not exceed hours normally worked in one week.

*This category includes information gathering, initial assessment, treatment, recheck on previously identified illness or injury, and management of chronic illness.

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BUFFALO SCHOOL HEALTH DEMONSTRATION PROJECT

CONTACT LOG SUMMARY FORM

School _____ Month _____ Year _____ Enrollment _____ Name of Person Completing Form _____

Telephone Number _____

TYPE OF INFORMATION	TOTALS FOR THE MONTH
A. Total Number of Student Contacts (not including screenings and physicals)	
B. Suspected Problem Code	
1. minor injuries	
a) in school	
b) out of school	
2. major injuries/accidents	
a) in school	
b) out of school	
3. eye disorders	
4. ear disorders	
5. dental	
6. respiratory	
7. nose and throat	
8. infections	
9. allergic disorders	
10. skin	
11. heart and cardiovascular	
12. blood disorders	
13. gastrointestinal	
14. genitourinary	
15. musculoskeletal disorders	
16. nutrition	
17. neurological disorders	
18. social-behavioral problems/mental disorders	
19. general symptoms, signs and ill-defined conditions	
20. miscellaneous	
21. need for immunization	
22. need for primary health provider	
23. need for dental provider	
24. endocrine and metabolic disorders	
25. other	

OVER PLEASE

TYPE OF INFORMATION	TOTALS FOR THE MONTH
C. Health Services Provided 1. responding to episodic illness or injury a) information gathering/initial assessment	
b) treatment	
2. recheck on previously identified episodic illness or injury	
3. management of chronic illness	
4. immunization a) verification/compliance	
b) vaccination	
5. records preparation/update	
6. referral	
7. counseling/education	
8. other services	
TOTAL NUMBER OF HEALTH SERVICES PROVIDED	

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BUFFALO SCHOOL HEALTH DEMONSTRATION PROJECT

SCREENING SUMMARY FORM

School _____ Name of Person Completing This Form _____ Telephone Number _____

Month _____ Year _____

Type of Screening	Totals for the Month	Total Referrals
Vision		
Scoliosis		
Color Perception		
Height/Weight		
Blood Pressure		
Urinalysis		
Hearing*		
Dental*		
Immunization Compliance Review		
Other Screening		
Physicals (Total)		
a) Sports		
b) Routine		
c) COH		
d) Working Papers		
e) Other		
TOTALS		

*Count only those screenings that were performed by BSHDP staff, not those performed by County personnel.

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BUFFALO SCHOOL HEALTH DEMONSTRATION PROJECT

REFERRAL LOG SUMMARY FORM

School _____ Month _____ Year _____ Name of Person Completing Form _____ Telephone No. _____

TYPE OF INFORMATION	TOTALS FOR THE MONTH Referrals	
A. Total Number of Referrals Made		
	Priority	Non-Priority
B. Suspected Problem Code		
3. eye disorders		
4. ear disorders		
5. dental		
6. respiratory		
7. nose and throat		
8. infections		
9. allergic disorders		
10. skin		
11. heart and cardiovascular		
12. blood disorders		
13. gastrointestinal		
14. genitourinary		
15. musculoskeletal disorders		
16. nutrition		
17. neurological disorders		
18. social-behavioral problems/mental disorders		
19. general symptoms, signs and ill-defined conditions		
20. miscellaneous		
21. need for immunization		
22. need for primary health provider		
23. need for dental provider		
24. endocrine and metabolic disorders		
25. other		
TOTALS		
NUMBER OF REFERRALS CLOSED FOR THE MONTH		

*Data should be reported in numbers unless otherwise specified.

OVER

TYPE OF INFORMATION	TOTALS FOR THE MONTH
C. 1. number referrals closed (to date)	
2. number referrals remaining open (to date)	
3. number non-compliance referrals confirmed (to date)	
TOTAL REFERRALS (TO DATE)	
D. Total Number of Follow-Up Attempts (to date)	

Total Number of Referrals Made Previously:

September _____

October _____

November _____

December _____

January _____

February _____

March _____

April _____

May _____

June _____

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BUFFALO SCHOOL HEALTH DEMONSTRATION PROJECT STAFF TIME SUMMARY FORM

School _____ Name of Person Completing Form _____ Telephone Number _____

Month _____ Year _____

Type of Activity	TOTALS FOR THE MONTH Staff MemberType* [ ]
Delivery of Health Services Responding Directly to Illness or Injury**	
Counseling/Education	
Immunization	
Referral and Follow-Up	
Physical Exam	
Screening	
TOTAL DELIVERY OF HEALTH SERVICES	
Conferences/Meetings/Discussions with Parents	
Conferences/Meetings/Discussions with Teachers, Administrators, etc.	
Organization/Planning/Staff Meetings	
Record Keeping/Logging	
Other (e.g., direct classroom instruction)	
TOTAL HOURS FOR MONTH:	

*Staff Member Type: HA-Health Aide N-Nurse O-Other
NP-Nurse Practitioner MD-Medical Doctor (specify)

**This category includes information gathering, initial assessment, treatment, recheck on previously identified illness or injury, and management of chronic illness.

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HF-1

BUFFALO SCHOOL HEALTH DEMONSTRATION PROJECT

REFERRAL FORM TO BE GIVEN TO DOCTOR OR MEDICAL SPECIALIST

DATE: _____

STUDENT'S NAME: _____ D.O.B.: _____

SCHOOL: _____ GRADE: _____

SCHOOL ADDRESS: _____

PROBLEM: _____

_____

_____

_____

_____

STAFF MEMBER | TELEPHONE NUMBER | DAYS OF WEEK AVAILABLE

HF-1A TO BE COMPLETED BY DOCTOR AND RETURNED TO SCHOOL

FINDINGS AND TREATMENTS: _____

_____

_____

PLEASE CHECK APPROPRIATE PROBLEM TYPE:

eye disorders
ear disorders
dental
respiratory
nose and throat
infections
allergic disorders

[ ]10-skin
[ ]11-heart and cardiovascular
[ ]12-blood disorders
[ ]13-gastrointestinal
[ ]14-genitourinary
[ ]15-musculoskeletal disorders

[ ]16-nutrition
[ ]17-neurological disorders
[ ]18-social-behavioral problems/mental disorders
[ ]19-general symptoms, signs and ill defined conditions

[ ]20-miscellaneous
[ ]21-need for immunization
[ ]22-need for primary provider
[ ]23-need for dental provider
[ ]24-endocrine and metabolic disorders
[ ]25-other

MODIFICATIONS TO SCHOOL PROGRAM: _____

_____

_____

DATE SENT | SIGNATURE AND TITLE OF EXAMINER

NEXT APPOINTMENT | ADDRESS AND TELEPHONE NUMBER

NOTE: Completed form to be given to parent or child or mailed directly to school health office at above school address.

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APPENDIX C

BUFFALO SCHOOL HEALTH ATTITUDE SURVEY

BUFFALO SCHOOL HEALTH KNOWLEDGE TEST

BUFFALO SCHOOL HEALTH STUDENT PROBLEM CHECKLIST

BUFFALO SCHOOL HEALTH

ATTITUDE SURVEY

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BUFFALO SCHOOL HEALTH ATTITUDE SURVEY - ELEMENTARY

NAME OR I.D. NUMBER: _____

		YES 1	CAN'T DECIDE 2	NO 3
1.	Do you slow down to walk on icy steps?	☐	☐	☐
2.	If someone needed first aid, would you try to give it?	☐	☐	☐
3.	Do you think that a bike can stop OK when it's rainy?	☐	☐	☐
4.	Do you cover your nose when you sneeze?	☐	☐	☐
5.	Do you take a bath almost every day?	☐	☐	☐
6.	Do you think its OK to feel sad sometimes?	☐	☐	☐
7.	Do you skip breakfast most days?	☐	☐	☐
8.	Do you sometimes get scared?	☐	☐	☐
9.	Do you believe that alcohol takes control over some people's lives?	☐	☐	☐
10.	Do you bite your fingernails?	☐	☐	☐
11.	Is it safe to eat with dirty hands?	☐	☐	☐
12.	Do you know how to stop someone's bleeding?	☐	☐	☐
13.	Do you think it is safe to push other kids?	☐	☐	☐
14.	Do you think that cars can hurt kids on bikes?	☐	☐	☐
15.	Do you think that it is easy for smokers to give up cigarettes?	☐	☐	☐
16.	Do you rub your eyes?	☐	☐	☐
17.	Do you think that drug control laws help to keep us safe?	☐	☐	☐
18.	Do you think it's dangerous to put rocks inside of snowballs?	☐	☐	☐
19.	At home do you ask for healthy foods?	☐	☐	☐
20.	Do you ever get angry?	☐	☐	☐

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		YES	CAN'T DECIDE	NO
21.	Do you believe that poisons may be anywhere around the house?	☐	☐	☐
22.	Do you believe that car drivers always see kids on bikes?	☐	☐	☐
23.	Do you think that your body needs water?	☐	☐	☐
24.	When you feel sick, do you go to school anyway?	☐	☐	☐
25.	When you get mad, do you throw things?	☐	☐	☐
26.	Do you think that eating fruits and vegetables will help you stay healthy?	☐	☐	☐
27.	Do you think it's fun to throw snowballs at cars?	☐	☐	☐
28.	When you cross a street, do you remember to look both ways?	☐	☐	☐
29.	Do you believe that sodas are bad for your teeth?	☐	☐	☐
30.	Do you think that lung disease comes from smoking cigarettes?	☐	☐	☐
31.	Do you remember to wash your hands after you use the toilet?	☐	☐	☐
32.	Do you think that milk helps your body to grow strong?	☐	☐	☐
33.	Do you think that crossing guards help to keep you safe?	☐	☐	☐
34.	If the school was on fire would you run outside fast?	☐	☐	☐
35.	Do you think that healthy foods taste bad?	☐	☐	☐
36.	Do you mind when other people cough in your face?	☐	☐	☐
37.	Can you tell if someone has a blocked windpipe?	☐	☐	☐
38.	Do you believe that poisons look dangerous?	☐	☐	☐
39.	Do you think that candy will help you to grow tall?	☐	☐	☐
40.	Do you think that your body works even when you are asleep?	☐	☐	☐

		YES	CAN'T DECIDE	NO
41.	Do you care if your home is kept clean?	☐	☐	☐
42.	Can you tell when a person is in shock?	☐	☐	☐
43.	When you are unhappy, do you try to hide it?	☐	☐	☐
44.	Do you remember to brush your teeth after meals?	☐	☐	☐
45.	Do you think that kids should drink liquor?	☐	☐	☐
46.	Do TV commercials tell you the healthy things to eat?	☐	☐	☐
47.	Would you take some strange pills just to see what would happen?	☐	☐	☐
48.	Do you think it's OK to leave garbage out in the open?	☐	☐	☐
49.	Do you think that a drunk person can do a lot of harm?	☐	☐	☐
50.	Do you think that only an adult knows how to choose drugs for a child?	☐	☐	☐
51.	Do you think that your actions can affect other people's health?	☐	☐	☐
52.	Do you expect to be a smoker when you grow up?	☐	☐	☐
53.	Should you taste something to see if it is poisonous?	☐	☐	☐
54.	Is drinking liquor a good way to act like an adult?	☐	☐	☐
55.	Do you think that people should not cry?	☐	☐	☐
56.	Do you think that kids should smoke?	☐	☐	☐

BUFFALO SCHOOL HEALTH DEMONSTRATION PROJECT

HEALTH KNOWLEDGE TEST

GRADE SIX

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1. What is the first thing to do when you cut yourself?

   a) apply antiseptic
   b) apply a bandage
   c) wash with soap and water
   d) wait to see if the bleeding stops

2. To stop bleeding in a wound, you should:

   a) wash the wound
   b) apply direct pressure to the wound
   c) put a wet cloth on the wound
   d) put iodine on the wound

3. When a bone is broken, you should:

   a) keep the person quiet and call the doctor
   b) put a splint on the bone
   c) move the person to bed
   d) make the person comfortable

4. All of the following are signs of shock except:

   a) abnormal breathing
   b) increased awareness
   c) rapid, weak pulse
   d) cold, clammy skin

5. Which one of the below is not a good thing to do when you are angry?

   a) talk to a friend or family member about how you feel
   b) talk to the person who made you angry
   c) pretend that you are not angry
   d) keep yourself busy with things you like to do

6. Which one of the activities below is an example of resting or relaxing?

   a) doing homework for school
   b) playing with friends
   c) cleaning up your room
   d) studying for a test

7. Which one of the following is not a good health practice?

   a) brushing teeth once a day
   b) cleaning fingernails every day
   c) bathing regularly
   d) washing hands before eating

8. Which of the following is not an effect of cigarette smoking on the body?

a) increased heartbeat
b) higher blood pressure
c) irritation of the nose, throat, and chest
d) increased appetite

9. How do cigarette advertisers try to get young people to try their cigarettes?

a) they show pretty people smoking their cigarettes
b) they give all the facts about cigarettes
c) they show doctors talking about cigarette smoking
d) they compare cigarettes and cigars

10. Where is the least likely place to get information about cancer?

a) the American Cancer Society
b) a medical report
c) your family doctor
d) cigarette advertisements in newspapers

11. Which of the following is true for cigarette smokers over the age of 35?

a) they have a higher death rate than non-smokers
b) they eat more than non-smokers
c) they have more education than non-smokers
d) they do not suffer damage from cigarette smoking

12. Which of the following diseases is not associated with cigarette smoking?

a) lung cancer
b) overweight
c) emphysema
d) heart disease

13. The most likely place for tooth decay to start is in the:

a) enamel
b) roots
c) pulp
d) nerves

14. The part of the tooth directly outside the gums is called:

a) the crown
b) the enamel
c) the cementum
d) the molar

15. Which of the following causes growth of bacteria and decay in the teeth?

a) Vitamin A
b) calcium
c) minerals
d) sugar

16. Teeth called the incisors are used to do which one of the below?

a) cut food
b) grind food
c) tear food
d) are not used in eating food

17. Which of the following should you do if you cannot brush your teeth after eating?

a) chew gum
b) have a candy
c) drink some juice
d) rinse with clean water

18. Why is it important to chew food thoroughly before swallowing?

a) you obtain more nutrients that way
b) the food tastes better
c) it helps the digestive process
d) you will not need to eat as much

19. Which one of the below is the least important for you to think about when choosing the food you will eat?

a) the number of calories in the food
b) the basic food groups your food comes from
c) the way it tastes
d) the amount of vitamins and minerals in the food

20. Why is enriched bread better for you than other bread?

a) it has more preservatives
b) it has more vitamins
c) it is less fattening
d) it tastes better

21. How is digested food taken into the blood?

a) enzyme action
b) secretion
c) elimination
d) digestion

22. The greatest part of the digestive process takes place in the:

a) small intestine
b) large intestine
c) mouth
d) stomach

23. What is the digestive juice secreted by the liver?

a) saliva
b) bile
c) gastric juice
d) Vitamin C

24. The main reason we need protein is that it:

a) helps the body grow
b) gives energy
c) keeps the body at the right temperature
d) regulates the heartbeat

25. Which one of the following foods has the greatest amount of iron in it?

a) hamburger
b) hot dog
c) steak
d) liver

26. Which nutrient does the body use to make energy?

a) proteins
b) minerals
c) carbohydrates
d) vitamins

27. The food that contains the most protein is:

a) apple
b) carrot
c) bread
d) meat

28. The four basic food groups are:

a) vitamins, proteins, fats, minerals
b) vitamins, carbohydrates, fats, minerals
c) fruits, vegetables, milk, meat
d) bread/cereal, fruits/vegetables, meat, milk

29. A good substitute for meat is:

a) macaroni
b) cheese
c) whole wheat bread
d) corn

30. Which one of the following fruits is not rich in Vitamin C?

a) bananas
b) grapefruit
c) lemons
d) oranges

31. Which one of the below is not a reason why young people smoke and drink?

a) they want to act grown-up
b) they try to forget problems at school or at home
c) they want to act like their friends
d) they work better after smoking and drinking

32. Alcohol is mainly a:

a) stimulant
b) food
c) depressant
d) medicine

33. Drinking alcohol results in:

a) increase in ability to think
b) loss of balance
c) better control of muscles
d) better vision

34. Which statement is true about narcotic drugs?

a) they are harmful and should not be used
b) they are used by some without bad effects
c) they should be used according to a doctor's instructions
d) they are only harmful if addictive

35. To prevent drug abuse, people should do all of the following except:

a) get help when they need it
b) solve problems in better ways
c) be critical of themselves and others
d) know the facts about drugs

36. If a friend or member of your family tells you what kind of medicine to take when you are sick, what is the best thing to do?

a) ask your teacher if it is OK to take the medicine
b) see your doctor and ask him what medicine to take
c) read the label and take the medicine if it has no harmful substances in it
d) ask the person in the drugstore if it is OK to take the medicine

37. The safest thing to do with medicine after an illness is:

a) keep it in the medicine cabinet
b) give it to a relative with the same illness
c) throw it away
d) save it for when you are sick again

38. Which one of the following will not help you avoid catching an illness from a person in your family?

a) sleeping in the same room with the person
b) using different glasses and dishes than the sick person uses
c) following the doctor's advice
d) staying away from the sick person

39. Which of the following is not considered a respiratory disease?

a) colds
b) bronchitis
c) pneumonia
d) measles

40. Why can you tell your doctor a secret and know that he won't tell it to other people?

a) he has no time to tell your secrets to other people
b) he thinks your secrets are not important
c) he knows that everything his patients tell him must be kept secret and promises not to tell them to others
d) he knows no one else is interested in your secret

41. Air that is breathed in through the nose or mouth first enters:

a) the lungs
b) the trachea
c) the diaphragm
d) the stomach

42. Which one of the below will <u>not</u> help to prevent a heart attack?

a) smoke little or not at all
b) exercise very hard once a month
c) eat healthy foods
d) jog or run on a regular basis

43. Which of the following is <u>not</u> a good rule for safe swimming?

a) knowing the depth of the water
b) checking diving board before using it
c) staying close to shore
d) swimming when nobody is around

44. A grease fire at home can be put out most quickly by:

a) tossing water on it
b) fanning the flames
c) smothering it
d) removing the grease

45. Which is <u>not</u> a safe practice for bike riding?

a) follow traffic laws
b) stay to the left of roads
c) keep your bike in good condition
d) ride single file

46. When you go on your first date, which one of the following is the most important thing to remember?

a) the boy should decide where to go on the date
b) the girl should decide where to go on the date
c) you must say all the right things
d) it is normal for you and your date to be nervous

47. Which one of the below is not important in helping to form your personality?

a) how much food you eat every day
b) the way you see your parents handle problems
c) the way you see yourself
d) the way you handle problems and treat other people

BSHDP STUDENT PROBLEM CHECKLIST*: ELEMENTARY FORM

Name: _____ School: _____ Teacher: _____

Grade: _____

CIRCLE ONE

1. Often have headaches..... yes no
2. Don't get enough sleep..... yes no
3. Have trouble with my teeth..... yes no
4. Not as healthy as I should be..... yes no
5. Not getting outdoors enough..... yes no
6. Too short for my age..... yes no
7. Too tall for my age..... yes no
8. Having poor posture..... yes no
9. Poor complexion or skin trouble..... yes no
10. Not good-looking..... yes no
11. Not eating the right food..... yes no
12. Often not hungry for my meals..... yes no
13. Overweight..... yes no
14. Underweight..... yes no
15. Missing too much school because of illness..... yes no
16. Often have a sore throat..... yes no
17. Catch a lot of colds..... yes no
18. Often get sick..... yes no
19. Often have pains in my stomach..... yes no
20. Afraid I may need an operation..... yes no
21. Can't hear well..... yes no
22. Can't talk plainly..... yes no
23. Trouble with my eyes..... yes no
24. Smoking..... yes no
25. Getting tired easily..... yes no
26. Nose or sinus trouble..... yes no
27. Trouble with my feet..... yes no

PLEASE TURN OVER

28. Not being as strong as some other kids..... yes no
29. Too clumsy and awkward..... yes no
30. Bothered by a physical handicap..... yes no
31. Getting low grades in school..... yes no
32. Afraid of tests..... yes no
33. Being a grade behind in school..... yes no
34. Don't like to study..... yes no
35. Not interested in books..... yes no
36. Afraid of failing in school work..... yes no
37. Trouble with arithmetic..... yes no
38. Trouble with spelling or grammar..... yes no
39. Slow in reading..... yes no
40. Trouble with writing..... yes no
41. Not spending enough time in study..... yes no
42. Too much school work to do at home..... yes no
43. Can't keep my mind on my studies..... yes no
44. Worried about grades..... yes no
45. Not smart enough..... yes no
46. Don't like school..... yes no
47. School is too strict..... yes no
48. Often feel restless in classes..... yes no
49. Not getting along with a teacher..... yes no
50. Textbooks hard to understand..... yes no
51. Trouble with oral reports..... yes no
52. Trouble with written reports..... yes no
53. Poor memory..... yes no
54. Afraid to speak up in class..... yes no
55. Dull classes..... yes no
56. Too little freedom in classes..... yes no
57. Not enough discussion in classes..... yes no
58. Not interested in certain subjects..... yes no
59. Made to take subjects I don't like..... yes no